709. During the whole period of lactation, especially the first lactation, it is advisable to have some of the milk drawn off to encourage and facilitate its flow ; this is also aided by massage, otherwise the delicate organs of suction will be injured and weakened. It is a help to anoint with a little honey each time before the infant is nursed ; and a little wine may also be added. It should not be allowed to take much milk at one time. It is better to feed little and often, at small intervals. For it may happen that after becoming satiated with the whole of the contents of the breast the infant suffers from distension, and very much flatulence, and the urine becomes white [too watery, Aeg.] In such a case, the best thing is to stop the nursing, allowing the infant to go hungry for some time, and it should be meanwhile put to sleep till digestion has had time to be completed. [It is unduly sleepy if over-fed.]

At first, the infant is allowed the breast three times only in the day. Should it be necessary to feed it on the first day, it . would be better for someone else than the infant's mother to do so, as we have explained.

Should the wet-nurse develop an intemperament or a painful malady, or have diarrhoea, or be constipated, someone else should give milk until she is better. The same applies if it be necessary to administer to her some medicine which has a decided potency or quality.

The infant is laid to sleep after feeding, but its cradle must not be rocked vigorously as otherwise one would churn the milk in its stomach. The rocking must be quite gentle.

It is good for the infant to cry a little before the feed.

710* Duration of lactation. Normally this is two years. When something additional to milk is required, such addition should be made step by step. Weaning must not be abrupt.

"He committed the child to the nurse, and he drank milk two years, after which they weaned him, and he grew up, and throve, and walked upon the floor." (Night 250).

After the first two teeth have appeared, a progressively stronger aliment is to be considered. Hard things, however, must not be allowed. At first, bread is given which the nurse

has masticated. Afterwards, bread softened with honey water, or dilute wine or with milk. This is followed by a little water,' or even a little wine in the water. It must not be allowed to take food to repletion. Should indigestion or flatulence occur, and should the urine become white, all food is stopped for a while, at least until it has been anointed in the bath.

711. Weaning.- In weaning the infant from milk, the aliment must consist of articles which can be sucked up ; and the replacement of milk by " acorns " of bread and sugar should be gradual. Soft meats may be given. If the infant per-sistently seek for the breast, crying for it, the best thing is to

prepare a paste to apply to the breast, made of four ounces of myrrh and smoothly ground pennyroyal.

712. Regimen up to Dentition. To sum up, we may say that the regimen of the infant is to be humectant, corresponding to its temperament at this period, for this is necessary both for nutrition and growth. The infant is also to be exercised gently correspondingly to the needs of nature, and especially during the later period of infancy.

[The word " exercise " includes lulling with music and singing lullabies • exercises are to be followed by gentle rubbing ; and after that comes the bath' which must not be cold. (Aegineta.)]

When the child begins to creep about, it must not be allowed to make strenuous efforts, or be encouraged to walk or sit erect before the natural desire to do so appears ; otherwise there may be injury done to its legs and back. When it first sits up or creeps over the ground, it is best to place it upon a smooth skin, to prevent injury by roughness in the floor. Bits of stick or any objects able to pierce or cut the skin must be kept out of its way. Care must be taken that it does not fall off some elevated place.

713. Hygiene of Dentition. When the canine teeth are about to appear, the infant must not be allowed to chew at anything hard lest the material from which these teeth need to be made should become dissolved by the processes of mastication. The gums should be rubbed with hare's brain and cock's fat, as this will _ help ^ their eruption. After the appearance of the teeth, the infant's head and neck should be rubbed with oil which has been shaken up with hot water [to cleanse it], and a little of the same oil may be instilled into the ears.

As soon as the infant is able to bite with its teeth, it will show this_ by trying to bite its own finger. It should then be given a stick of not too dry liquorice root or inspissated Spanish

juice to chew at, for this will be beneficial at this period and will prevent ulcers from forming in the gums and dull the pam [and irritation of teething]. The gums may also be rubbed with salt and honey to relieve the pain.

When the teeth are fully out, the infant may be given a stick of liquorice or root of liquorice (not too dry) to bite at. When the canines are fully out it is good also to rub the neck with some form of sweet oil. Later still, when the infant begins to talk, its teeth should be rubbed, especially at their bases.

3. Concerning the Diseases of Infancy

714. The chief mode of treating infants is by controlling the wet-nurse. If there should be any suspicion of plethora of blood in her, bleeding or cupping should be done. If there be plethora of some other humour, that must be drained also. When it is necessary to bind, or to loosen the bowels, or to prevent the ascent of vapours to the head, or to rectify the respiratory organs, or to correct an intemperament, the method of treating

this is by way of the food "and drink [of the nurse]. If it becomes necessary [for the nurse] to procure plentiful evacuation by the bowel, or if this occurs spontaneously ; if emesis needs to be procured, or if vomiting occurs spontaneously, it is best to give the infant to someone else to nurse during that period.

715* DISORDERS DURING DENTITION

Inflammation ■ of the gums (gingivitis) may occur during dentition. Inflammations, may also occur in the ligamentous structures round the mandibles, causing trismus. In such cases one should gently press the parts with the finger and rub in one of the oils named in the section dealing with the eruption of the teeth, or honey which has been well mixed with oil of chamomile, or with turpentine oil. One may also pour warm water, in which chamomile and dill have been boiled, over the top of the head from a height. (Cf. 414.)

For burning fain in the gums apply oil and wax as an epitheme or use salted flesh which is a little " high."

TAegineta advises rubbing the gums frequently with the finger alone or anointed with fowl-grease, while the infant is in the bath. When the teeth are just about to show anoint the head with sweet oil and drop some into the ears. He recommends the amount of food to be increased, and advocates warm baths. For itching of the gums, he says the flesh of an old pickle will relieve.]

Diarrhoea. This is specially apt to arise during dentition. Some account for it as due to the sucking in by the infant of

salty sanious effete matters from its own gums along with the milk. ^ But it is possible that this is not true ; that the real cause is an interference with the natural faculty, so that digestion is imperfect and pain results. It is just this that hinders diges-tion in feebly constituted infants.

Cf. Modern teaching : " Vomiting and diarrhoea must always be looked upon as due to some cause other than dentition, particularly to improper feeding — Elder and Fowler. lso °'

If it is only slight, you will not be asked to treat it. If the parents are afraid it will become injurious, leading to wasting, one would treat by applying rose-seed, caraway, anise, and celery (parsley-) seed [sprinkled on wool : Aeg.] to the abdomen, or apply a plaster prepared with caraway and roses infused in vinegar, or with frumenty boiled in, vinegar. Should this fail, use a sixth part of a dram of goat-cheese in .cold water, taking care to prevent curdling of the milk in the infant's stomach by replacing the milk for that day with the soft yolk of an egg, or with morsels of bread boiled in water, or ground wheat boiled in water. [Hot desiccants may be used : Aeg.]

Constipation during dentition. The treatment is by a sup-pository made with well-cooked honey, or with pennyroyal, or with iris-root (in the natural state or after scalding). A little honey may be given in the food. As much oil of turpentine as makes the bulk of a chick-pea may be gently rubbed over the abdomen ; or olive-oil ; or some ox-bile may be applied over

the thigh or over the navel. Or maidenweed (bakhuri maryam) may be applied. [Or the abdomen may be anointed with mint pounded in honey : Aeg.]

716. Convulsions during dentition. This is generally due to fermentative changes in the digestion, aided by nervousness, " especially if the baby is over-fat and humid in constitution. The treatment is to use oil of iris, lily, alkanna, or mallow. [Aetius advises against figs and acid foods.]

Grave convulsions during dentition ; " tetanus." This is treated by water in which cucumber [or heliotrope] has been boiled ; or by oil of violets admixed with oil of cucumber [or oil of privet : i.e. calefacients : Aeg.].

If there is reason to suppose that the convulsions are due to dryness, because they develop after fevers, or after severe diarrhoea, and because they gradually become more pronounced, then the joints should receive an inunction with violet-oil (alone or beaten up with a little white wax), and violet-oil may be applied to ^the head. The same things should be employed vigorously if " dry " tetanus develop.

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To the lay mind, all forms of gastro-intestinal catarrh, skin eruptions and nervous phenomena (particularly convulsions) are attributed to dentition. ' Beyond admitting that there is usually some congestion of the gums, with exaggerated salivation, some loss of appetite, restlessness, temporary rise of temperature, and general uneasiness, Elder and Fowler {loo. cit.) teach that these various phenomena depend chiefly on rickets, and nutritional errors. There is however something to be said for the lay view.

After the teeth have appeared, Aegineta recommends the infant to be allowed to bite at a piece of nearly dry decorticated iris root. Butter and honey should also be inuncted.

717. Incessant crying^ with loss of sleep. The mouth is constantly. whimpering. [The causes of persistent crying are : heat ; cold ; fleas ; gnats ; hunger ; thirst ; retained urine — for which give melon-seed and julep to both nurse and child ; retained faeces — for which give the nurse laxatives, herbs, olive oil, prunes : Haly Abbas.] For this condition it is necessary to make it sleep if possible, by giving poppy bark and seed, and oil and lettuce and apply poppy oil to the temples and vertex. If this does not suffice prepare the following medicament : Take bugle seed, juniper berry, white poppy, yellow poppy, linseed, celandine seed, purslane, plantain seed, lettuce seed, fennel seed, aniseed, caraway ; some of each is roasted little by little ; then all are rubbed together. Add one part of fried^ fleawort seed which is not powdered. Mix the whole with a like amount of sugar and give two " drams " as a potion.

If it is desired to make it still stronger, one should add an amount of opium equal to a third part of it or less.

718. Night-terrors. These are often due to over-repletion with food, which undergoes putrefactive change. The stomach is aware of this. An injurious effect passes on from the sensitive faculty to the formative and imaginative faculties, wherefore the

terrifying visions arise. It is necessary therefore to see that the stomach is not full at bed-time ; honey should be given the infant to lick, and in this way it will digest that which is in the stomach and displace it.

719. Water on the Brain. This is discussed under the heading of diseases of the head.

Inflammation in the brain. Siriasis. There is pain in the eyes and the throat, and the face becomes yellow. [The body is dry ; the fontanelles are depressed, the orbits sunken : Aeg.] Hence the brain must be rendered cool and moist by the use of cortex of cucumber, parings of gourd, juice of garden nightshade, and especially purslane juice, and rose oil with a little vinegar, and rose oil with egg-yolk. Each of these is constantly changed.

720. Affections of the mouth. Aphthous stomatitis. Aphthae. Thrush. — Aphthae are plentiful when the lining

membrane of the tongue and mouth is too delicate to bear touching, even by the wateriness of the milk, for it is this that is injurious to it, and gives rise to" the aphthae. The condition is worse, and dangerous to life, if they remain immature and black like charcoal. The condition is more favourable if they are white or yellow. The . treatment is to employ some such gentle medication as -is described in special treatises on the subject. Sometimes triturated violets are sufficient by themselves ; sometimes they need mixing with roses, a little saffron and carob-bean. Or, again, lettuce-juice, nightshade juice, purslane juice [and endive-juice] may 'suffice. If treatment is still resisted, use bruised liquorice root.

Galen advised cooling astringent washes if the mucous membrane is red • more refngerant washes if it is yellow ; detergents if it is white anT according to Alsaharavms, a .powder of myrtle, saffron, and sugar. The strongest dlscutifnts (sandarach, rose-'od) are needed, if the mucous membrane is H disc ^ients

When aphthae are associated with boils in the gums it is beneficial to use myrrh, gall, frankincense bark, thoroughly ground up and mixed with honey. An acetous rob* of mulberries and a rob of unripe grapes may suffice. Sometimes it is advantageous to bathe the gums with honey-water and wine (or, syrup and honey) and follow this up with some of the desiccatives we have named.

If a stronger (astringent) medicament is required, use the leaf-veins and bark of pomegranate, and pomegranate blossoms and sumach, six drams of each ; galls, four drams ; aniseed two drams. Rub them together and thoroughly powder them up. Then dust this upon the gums.

721. The eye. Prominence of the eyes. Apply juice of boxthorn made with milk ; then bathe with water in which chamomile and mountain balm have been boiled.

_ Whiteness over the pupils, due to much crying, is treated with nightshade juice.

If the eyelids are affected with blepharitis, owing to constant crying, treat this also with nightshade juice.

722. The ear. Watery discharge from the ears. This is due to an undue degree of moisture in the body, especially in the brain. An ointment is prepared with wool-fat, honey, wine and a little alum, or nitre or saffron. This is then introduced into the ears with a syringe. Or it may suffice to dip wool into

Z A° U I W1 7 e ' ° r int ° wIne to whIch a littIe saffron has been added, and place this in the ears.

Lit. juice made thick.

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Earache. This may be due to flatulence, or to undue moistness. It is to be treated by juice of boxthorn, origanum, salt, white sugar, lentils, myrrh, colocynth seeds and cedar [or, savin] seeds. Any of these should be digested in oil and instilled drop by drop. ,

723. Disturbance of the breathing. Difficulty oj breathing. Anoint the roots of the ears and tongue with oil. It would also be very helpful to press the tongue down so as to cause the infant to vomit. Warm water may also be dropped into the mouth drop by drop, and a little linseed and honey be

given it to suck. . . .

Abnormal snoring. This is noticed when the infant is in very deep sleep. Give linseed ground up in honey, or ground caraway' in honey, to lick.

Snorting, says Aegineta, is due to improper food The stom ach beco mes loaded with phlegh. A linseed linctus is to be gl ven, or honey. If that does not suffice to stop it, vomiting is induced as above nrere dine since the

(Laryngismus stridulus may correspond to this and the preceding, since xne laryJSmlsTs^pt to occur during sleep, and is aggravated by prying .whereas stridor may disappear under both tliese conditions. The question of adenoids would also come to mind).

Constant sneezing. This may be a sign of cerebral disorder. In such a case this must be treated, cooling the inflammation, by inunction with infrigidant juices and. oils. If there be no inflammation, some mountain balm may be insufflated into the nostrils.

Loss of voice in infants is due to constipation. Give cabbage-juice by the mouth or rectum (Aeg.).

724 Cough and Coryza. Some people advise for this that the infant's head should be laved in plenty of warm water and that plenty of honey should be smeared over the tongue. After that, the root of the tongue should be depressed to enable the infant to expel the abundant phlegm by vomiting, which will secure recovery. Small doses of the following demulcents may

also be given daily in new milk : gum arabic, gum tragacanth, quince seed, liquorice juice, brown sugar.

725. Digestive disturbance. Weakness of the stomach. The abdomen should be anointed with musk and rose or myrtle water. Give a drink containing quince juice and a little clove or nutmeg, or three-eighths of a dram of nutmeg with a small quantity of quince-juice. .

Severe vomiting. This may be treated with three grams of clove. A plaster containing weak anti-emetics may be applied

over the stomach.

Hiccough. For this administer coco-nut with sugar.

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726. Flatulent distension. The treatment has already been given in the section on diseases of the head. The following very useful measure may be here mentioned. Take equal parts of origanum,_ castoreum and caraway. Rub them up and mix together. Give the weight of three barley grains in a draught.

Colic. The infant writhes and cries. Hot water applications should be made to the abdomen, using also plenty of warm oil and a little wax.

Griping. This is due to cold. Beneficial for this condition is the following •: three drams of each of nasturtium and caraway; grind them together. Pass through a sieve. Intersperse them with old cow butter. Give as a draught with cold water.

727. Prolapsus ani. Give pomegranate bark, fresh myrrh, inner rinds of acorns (or, chestnuts), dried roses, burnt horn' alum of Yamen, nails of goats, pomegranate blossoms (unopened) and nails of fowls. Take equal parts and thoroughly boil them together in water until all their virtue has come out. Then give as an enema, tepid.

[Aegineta advises applications of tepid brine or salt water. In modern words • give astringent enemata.]

728. Hernia. When a child cries very much, a swelling may form in the groin or navel. This is a hernia. Some advise that it should be rubbed with cardamon (bishop's weed) and sprinkled with egg-white, a thin bandage being applied tightly over the place. Others advise burnt bitter lupin, as an infusion in wine and myrrh, placed over the part. Stronger remedies are : hot styptics (astringents), such as myrrh ; cypress bark ; cypress fruit ; aloes ; acacia fruit. [Compresses of alum, galls, etc. : Aetius.] See also the special chapter on the subject.

729. Formation of an inflammatory mass between the throat and stomach [= retro-pharyngeal abscess?]. This sometimes spreads to the^ muscles and cervical vertebrae. The treatment is to cause the infant's bowels to act, using a suppository. After that, give mulberry rob and the like.

An inflammatory mass may form in the navel, especially

after the cord has separated. In this case one should use Celtic spice and_ turpentine ; dissolve them in rape-seed oil. They may be given internally or applied as a plaster over the navel.

730. Worms. Round worms are very injurious when they arise in the small intestine. Thread-worms are usually round the anus. Flat worms are rare. Round worms are treated with absinthe water (wormwood of Pontus), of which a little is given m milk, according to its concentration. It may be necessary

to apply a plaster over the abdomen, made up of Kabul rice, myrobalan, ox-bile, and colocynth pulp. To treat threadworms take one part of each of elecampane and madder [chelidonium ; a kind of cucumber : (other readings)] ; add sugar equal in bulk to the whole. Give as a draught with hot water.

731. Disorders of the Skin. — [Aegineta gives the following advice : — (i) Attend to the diet of the wet-nurse. Give sweet articles of food. (2) Attend to the diet of the child ;_ (a) this should not be too rich or too spare; {b) avoid constipation: add a little honey to the food; or, should this prove inadequate, add turpentine to the bulk of a chick-pea; (c) avoid looseness cf the bowels: add millet to the food.]'

Furunculosis. Pimples forming all over the body. If they are ulcerating and black it is a fatal sign. If they resemble aphthae, it is also mortal, especially when they spread out. If they are white, it is more hopeful. If red, it is also more hopeful. If they come out freely, it is a better sign.

The treatment in all cases consists in using fine desiccants dissolved in the bath-water, such remedies as rose, myrtle, mastic-leaves, tamarisk, and their respective oils being boiled in the water. [Other remedies recommended by Alsaharavius : lotions of marjoram, mint, centaury ; ointments of spuma argenti, ceruse, armenian bole, sulphur, mercury, almonds.]

If the furuncles are healing, they should be left alone until they are mature ; and they are then treated.

If they are ulcerated, they need an ointment of ceruse. They may need bathing with honey-water and a little nitre, as one does

aphthae.

If they scab over it will be necessary to use something stronger. One therefore bathes them with aqueous borax mixed with milk, to enable it to be borne.

If they become vesicular, they should be steamed, and have water poured over them in which myrtle and rose and bogrush (schoenus), quinsywort- (asperula) and the (young) leaves of the mastic tree have been boiled.

For vesicular eruptions, Rhazes advises : (i) decoction of dates and figs with fennel-water ; (2) when the rash is fully out, give rose-water baths, myrtle-water baths, and then rub the skin with oil of roses.

Intertrigo. Apply ground myrtle as a dusting powder, or use powdered liquorice root [or iris root] ; or finely ground-up .rose or galangale, or barley flour, or lentil flour.

Pruritus.— Foment and anoint with refined oil, in which a little wax has been melted (Aeg.). Correct the acrimony of the mother s milk (Alsaharavius^ Stop all sweets and salts in the mother's diet, because they inflame the blood. Immerse the child in a bath of mallows, pearl barley, fenugreek, gourds, etc. (Rhazes).

732. Fevers. In this case it is best to treat the nurse by giving her such remedies as pomegranate juice mixed with oxymel and honey and succus citruli, and a little camphor and sugar [or, acetous syrup of pomegranate and honey and cucumber juice, with a little camphor and sugar]. Then induce sweating by using fresh reeds, which are squeezed so that their juices can be applied to the head and feet, covering these parts therewith.

4. The Regimen from Infancy to Adolescence

733. The great principle here is the inculcation of control of the emotions. One should take care that they do not give way to anger and fear, or be oppressed by despondency, or suffer from sleeplessness. They should therefore be allowed that which is pleasing and appetizing and one should avoid giving them anything arousing disgust.

There are two useful objects attained in this way. The first is that the mind grows from its very start accustomed to favour-able emotions, and develops a fixed habit for good. The second is that the body is also benefited. For just as bad habits of thought supervene on intemperament of the body, so also a physical intemperament may be traced to habits of mind which are contrary to the ideal.

Anger is a strong calefacient. Despondency is a desiccant. Torpor relaxes (retards) the sensitive faculties, and causes the constitution to tend towards the phlegmatic type. Therefore in safeguarding the emotions the health of the mind and body are at the same time maintained.

734. When the child awakes, it should first have a bath. He should then be allowed to play for an hour. Then he should have his breakfast. Then he should be left to play for a long time. Then he should have another bath. Then he should have a hearty [light : Aeg.] meal, but he must not be allowed to drink water with his meal, because otherwise insufficiently digested chyle will become absorbed and disperse all over the body.

735. At the age of six, he may be given tuition by a master [who is of mild and benevolent disposition : Aeg.], who will teach him step by step and in order [cheerfully, without con-straint].' He should not be compelled to stay continuously in school [Relaxation of the mind contributes to the growth of the body : Aeg.] At this age, bathing and rest should be less frequent, and the exercise before meals should be increased.

Wine must not be allowed. This is specially true if the temperament is hot and moist, because the injurious effect of

wine — namely the generation of bilious humour, as is seen in topers — readily influences the child. The advantage in wine is that it excites the secretion of urine, thus removing the bilious humour with it, and that it moistens the joints. Neither of these effects are necessary at this age, because his bilious humour is not so plentiful as to need helping out of the body, nor do the joints need moistening. He should therefore be allowed as much sweet limpid water to drink as he wishes.

This is the programme up to thirteen years of age. Care is daily exercised towards lessening the humidities, and increasing the dryness of the tissues, and hardening the body. [Grammar is taught now : Aeg.]

The rule therefore is to allow light exercise, and to avoid whatever entails toil, between boyhood and adolescence. After this age, the regimen is that usual for maintaining the health (in early manhood).

From 14-21, use gymnastic exercise to strengthen the body and prevent indulgence in carnal desires. Wine should be allowed sparingly. Pursue mathematics and begin philosophy (Aegineta).

We may therefore pass on to the subject of exercise, first discussing the essentials for the regimen of young adults, and the subject of gymnastic exercise.

THESIS II

THE REGIMEN PROPER FOR THE PHYSICALLY MATURED.

§ 241.— The Right Use of Adult Life.

How happy is he who takes advantage of earlv days, and pays his debt (to God)—

Those days when he has power, health, energy of heart, and strength ■

That state of youth, like a verdant and fresh garden, yielding produce and fruit

unstintingly ;
The springs of strength and eager desire flowing, and the soil of the body verdant

through them.

Masnavi, " p. 107.

The real object of conserving the energies of the body lies in the attainment of spiritual development. The actual bodily occupation is itself, if we will it so, the practical means of that attainment. The energy of will to associate this means of worship with the subjugation of the vices inherent in our frailty must be employed during the early years if we are not to find ourselves in old age

powerless to advance along the critical stages of the journey to the only true Goal. This principle underlies the idea of " right Regimen."

The soil of the " body " and the " desires " having been consistently tilled and purified and tended, the coming of old age cannot but also reveal spiritual blossoms full of delight for others. " Do not then wait," says the Masnavi x "till

The soil becomes barren, dry and poor :

Never do fine plants grow from barren soil ;

When the water of energy, and the water of eager desire cease

He derives no benefit from himself or from others ;

The eyebrows hanging over like a crupper-strap ;

The eyes watery and dim ;

The face through old age like the back of a lizard ;

The articulation and taste defective, and the teeth useless ;

The day late, the ass lame, and the road long ;

The workshop (i.e., the physical body) gone to ruin,

And the work disorganized,

The roots of a bad nature fixed firmly in him,

And the power to tear them up diminished."

{Ibid., 107-8.)

A picture admirable of the state of affairs in old age ; and also full of significance in regard to the well-being of the soul

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i . The General Regimen for the Athletic Age. Collective Discourse "upon Bodily Exercise

736.

INCE the regimen for maintaining health consists ' essentially in the regulation of (i)~ exercise, (2) food, and (3) sleep, we may begin our discourse with the subject of (gymnastic) exercise. We may define exercise as voluntary movement entailing deep and hurried respiration.

Once we direct the attention towards regulating exercise as to amount and time, we shall find there is

no need for such medicaments as are ordinarily required for remedying diseases dependent on [abnormal] matters, or diseases of temperament consequent upon such. This is true provided the rest of the regimen is appropriate and proper.

737. We know that this must be so when we reflect how, in regard to nutriment, our health depends on the nutriment being appropriate for us and regulated in quantity and quality. For not one of the aliments which are capable of nourishing the body is converted into actual nutriment in its entirety. In every case digestion leaves something untouched, and nature takes care to have that evacuated. Nevertheless, the evacuation which nature accomplishes is not a complete one. Hence at the end of each digestion .there is some superfluity left over. Should this be a frequent occurrence, repetition would lead to further aggregation until something measurable has accumulated. As a result, harmful effete substances would form and injure various parts of the body. When they undergo decomposition, putrefactive diseases arise.* Should they be strong in quality, they will give rise to an intemperament ; and if they should increase in quantity they would set up the symptoms of plethora which have already been described. Flowing to some member, they will result in an inflammatory mass, and their " vapours " will destroy the temperament of the substantial basis of the breath.

That is the reason why we must be careful to evacuate these substances.

Their evacuation is usually not completely accomplished without the aid of toxic medicines, for these break up the nature of the effete substances. This can be achieved only by toxic

* Bacterial infections.

agents, although the drinking of them is to a certain extent deleterious to our nature. As Hippocrates says, "medicine purges and ages." ' More than this, the discharge of superfluous humour entails the loss of a large part of the natural humidities and ot the breath, which is the substance of life. And all this is at the expense, of the strength of the principal and auxiliary members, and therefore they are weakened thereby. These and other things account for the difficulties incident to plethora whether they remain behind in the body or are evacuated from it' Now exercise is that agent which most surely prevents the accumulation of these matters, and prevents plethora. The other forms of regimen assist it. It is this exercise which renews and revives the innate heat, and imparts the necessary lightness (airiness !) to the body. For it causes the subtile heat to be increased and daily disperses whatever effete substances have accumulated ; the movements of the body help to expel them conveying them to those parts of the body whence they can readily leave it. Hence the effete matters are not allowed to collect day after day, and besides this, as we have just said exercise causes the innate heat to accresce, and keeps the joints and ligaments firm, so as to be always ready for service, and also free from injury. It renders the members able to receive the nutriment, m being free from accumulated effete matters Hence

it renders the attractive faculty active, and resolves fibrosis in the tissues, rendering the members light, and the humidities attenuated, and it dilates the pores of the skin.

To forsake exercise would often incur the risk of " hectic " because the faculties. of the members are impaired, inasmuch as the deprivation of movement prevents the access to them of the innate breath. And this last is the real instrument of life lor every one of the members.

§ 242.— Value of Exercise.— (i) It hardens the organs and renders them fit for their functions ; (2) It results in a bitter absorption of food, aids assimilation, and, by increasing the innate heat, improves nutrition. (3) It clears the pores of the skin. (4) tL'ph^que Sub3tanceS throu g h the l^gs. (5) Strength^

Vigorous exercise invigorates the muscular and nervous system.

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2. The Various Forms of Exercise.

738. There "are two main forms of exercise : (a) that pertaining to the ordinary human under-takings ; (b) that which is undertaken for ^ its own sake, namely for the advantage accruing from its pursuit, [i.e., sports, athletics, gym-nastics, etc.]

There are differences between the two forms.

, One is strong and powerful, the other weak and

: ight ; one is speedy, the other slow. Athletics implies strenuous exertion, combining swiftness with energy. Recreative exercise, undertaken for relaxation, implies leisurely movements. There are all grades between these extremes, and there is a mean between them [called moderate exercise].

739. List of the forms of exercise, (i) Strenuous forms. Wrestling contests. Boxing. Quick marching. Running. Jumping over an object higher than one foot. _ Throwing the iavelin. Fencing. Equitation, or horsemanship. [Hunting : Galen, Rhazes.]

Equitation "strengthens the body, especially the stomach, more than any other mode of exercise. It clears the organs of special sense, and renders them more acute. But it is most inimical to the chest " (Antyllus).

The mental excitement of hunting is good for many diseases.

Clapping the two hands alternately before and behind, with a quick motion while standing on tip-toes. [Dancing (Oribasius), Swimming (ib)]. These are special forms of individual athletic exercises.

Dancing, said Hippocrates, is beneficial for amenorrhoea, and has been used for procuring abortion.

Swimming in the sea.— This has a warming effect, and strengthens the body, and renders it thin. It is beneficial for dropsy, skin eruptions, elephantiasis But it may be injurious for the head and nerves. The body must be rubbed with oil first. (Oribasius.)

(ii) The following are recreative or milder modes of exercise. Swaying or swinging to and fro, as when being carried in a litter. Standing or reclining in small boats. Fishing. Sailing. '' Gestation " — that is, being driven in horse-carriages, or carried on camels, or in palanquins, or a horse-litter.

{Military exercises']. Among the more vigorous exercises are those performed by soldiers in camp, in military sports. Pleth-running — where a man runs on the campus from end to end (a sixth of a stadium), to and fro, lessening the distance each time until finally he comes to stand in the middle. Combat with one's shadow. Exercise with the leatherbag [which is filled with

flour or sand, and hung to the level of the person's navel ; then pushing it forwards as far as it will go, the athlete runs rapidly backwards to escape its recoil : Oribasius]. Long jumping High jumping. Play with a large ball [inflated skins or leather]. Play with a small wooden ball on horseback [i.e., polo].

^ j "J 1 *-, took the bat - from the Sa S e and grasped it firmly • then mounting

sWkrt S?r ?v baU b ^ Mm f nd gall °P ed after * til1 he reached it when nl r Pa ^ lr „ h lt ^^l-n'iP^ 111 S^PPmg the bat-handle the while ; and he ceased not maUmg the ball till his hand waxed moist and his skin, perspiring imbibed the medicme from the wood." (Night 4, Burton i. 42). P^pirmg, im

Stone-throwing. Lifting heavy . stones or weights, either while standing, or carrying them. Cricket (tibtab). [Scaling ropes _ (Aeg.). Digging (Aeg.)]. Running galloping horses round m a circle. [Leaping with a weight on the shoulders, which exercises the spine : Galen.]

740.. There are various forms of wrestling. For instance, in one form, one of the wrestlers grasps the other and holds him by the tips of the hands. The other tries to get loose from his opponent. In another, .one wrestler grips the right hand of his opponent, and takes the left hand with his left, the two facing one another; then the one raises the other up into the air, and turns him round, sometimes in the bent position, sometimes in the upright position. (See drawing at head of this section.) Again, the two wrestlers may press against one another breast to breast! Again, one holds the other by the neck to pull him to the ground. Or, one may twist and press with his feet, twisting his legs round his opponent, or turn heel to heel. Various other movements of that kind are in vogue among wrestlers.

Exercises involving swiftness. Interchanging places with a partner as swiftly as possible, each jumping to and fro, either in time [to music] or irregularly. Another exercise is carried out with two stakes. The man jumps backwards repeatedly without moving his position, and plunges the two stakes on either side, one pace apart, causing the one on the right to go to the left, and the one on the left to go to the right. This is to be done as

swiftly as possible.

Exercises involving vigour and swiftness should alternate with mild exercises, or with rest. The manner of the exercises should also be diversified, so that they are not always performed in the same way.

741. There is an exercise which is appropriate for each individual. Gentle exercise (e.g., swinging : rocking in a swing) is beneficial for those who are debilitated by fevers, and

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are convalescent, and can neither walk nor sit. Also for those weakened by a draught of hellebore and the like. Also for those whose diaphragm has been rendered enfeebled by disease. When it is done gently, it tends to induce sleep, and disperse flatulence, relieves various disorders of the head (e.g., stupor, forgetfulness)

provokes the appetite, and favours movement of the bowels.

To ride in a litter [horse, camel, palanquin, etc.] is appropriate for those afflicted with semitertian fever, composite fevers, phlegmatic fevers, those who are dropsical, or have gouty pain, or renal disorder. For this form of exercise renders (effete) matter in a condition favourable for excretion, and may be made gentle for the feeble, more vigorous for the more vigorous. Greater movement is produced in the humours by riding m a carriage, but when doing so one should face backwards, because this is better when the eyesight is weak, and it is an advantage to have the shadow in one's face.

Fishing.— The absence of mental and bodily excitement is good for certain conditions (Aetius).

Boating and Sailing.— To go out in a small boat, or in a larger sailing vessel is beneficial for lepra, dropsy, apoplexy, dilatation of the stomach and coldness of the stomach. For if the person is near the shore he is incited to vomit, and then when that subsides, 'the stomach is benefited. But to go on the high seas is more efficient for clearing up such disorders as we have named, because the mind is diverted by successive gladness and misery, and the organs of nutrition receive benefit in proportion to the exercise of the body itself.

742. Each member should be exercised in a manner appropriate for itself, (i) The hands and feet. The proper way to exercise these is obvious, (ii) The organs of respiration, and the muscles of the chest. These may be exercised in various ways. (a) By singing and " vociferation." The voice is sometimes deep, sometimes loud, sometimes abrupt, sometimes used in all modes in one exercise. By this means the condition of the mouth, uvula, lips, tongue is improved. The muscles of the neck are improved in appearance. The colour of the skin is improved. The chest is expanded. (J?) Exercises in which the expiration is forced and the breath is held, [i.e., the so-called Yogi exercises.]

These benefit the whole body, because they open up and purify the channels, including those of the breath.

As shown in § 123, 144, the channels here referred to are not necessarily the anatomical .and histological ones.

Aetius adds that such exercises attenuate the blood.

However, to use a loud voice for a long time is injurious because by continuing it vigorously too much air is taken in, which is itself harmful," and by continuing it too long, air must be expelled unduly, and this also is harmful. Therefore the rule is to begin gently, by reading aloud, speaking more and more loudly up to a certain point and then allowing the voice to sink by degrees. If the time occupied in this exercise is moderate, it is very helpful, but if the time is too long, there is risk of injury to health.

[Reading aloud in a high tone helps to remove redundant humours through the skm. Reading m a moderate tone helps the insensible perspiration throughout the body, attenuates effete matters, and gets rid of saliva, mucus and phlegm by coughing. Frigid people should read aloud frequently because of its warming effect. This method of exercise requires control and judicious management if the system is full of depraved humours, or if the stomach is loaded with crudities, because otherwise noxious gaseous substances are distributed all over the body.

Ritual : First empty the bowels ; then anoint the body ; then sponge the face and lower parts with water. The tone of the voice should be moderate at first, and the person should walk about while speaking. Then a louder tone should be used and verses should be repeated several times (Aeg.).]

(iii) Vision is exercised by inspecting minute objects, and sometimes by arranging that they are only poorly illuminated.

(iv) Audition is exercised by listening to faint sounds, or sometimes to loud ones.

(v) Exercises appropriate to each individual member will be referred to when we speak of the maintenance of the health of each organ in the special volume.

Among the modern books which describe suitable exercises of the above kinds, that by Eustace Miles may be here noted (see Bibliography) .

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743. Whatever the exercise, one must ensure that its vigour or heating effect is not likely to affect some weak member directly. Such a member should only bear the brunt of the exercise secondarily. For instance, a person with varicose veins should not use an exercise in which the feet are much used. He should substitute an exercise which employs the upper parts of the body— the neck, the head, and the hands. In this way the brunt of the effect of the exercise is borne first by the upper parts, and by the feet last.

The exercise must be modified if the person is debilitated.
If he is robust it should be made vigorous. '

You realize now that every member has its own peculiar
form of exercise. That the exercise for the eye is to gaze upon
something delicate ; that the exercise to strengthen and expand
the chest is vocal, and consists of graduated singing exercises.
Similarly with the teeth and the ear. Every member is con-
sidered in this way in the chapter specially devoted to it.*

* This and other references in the original text are retained, though actuallv
the subsequent volumes of the Canon are not dealt with in the present treatise. '

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3. The Best Time for Commencing Exercises. The Proper
Duration, and other Rules.

744. The time to choose for beginning exercise is when
the body is free from impurities in the internal organs and blood-
vessels, so that there is no risk of unhealthy chyme being dis-
persed through the body by the exercise. Yesterday's food
should have passed both gastric and hepatic digestion, and also
intravascular digestion, — the time for the next meal now ap-
proaching, as can be ascertained by examining the urine as to its
substance and colour.

S24* The urinary signs of the proper time for undertaking exercise
are specified in Aegineta.— The urine should be deep yellow, because this shows that
the digestion has long since been completed. If the urine is moderately pale it
shows that the digestion has only just been completed. An evacuation of the
bowels is here indicated. If the urine be watery, it shows that there is still some
undigested chyme in the stomach.

If it is some time before the next meal is due, and there is a
need for more nutriment, and the urine shows " igneity " (i.e., is
high-coloured), the natural yellowness having now passed off, it
indicates that exercise at this time would be detrimental, namely
by exhausting the strength.

For this reason, some people say that when vigorous exercise
has to be undertaken, it is best that the stomach should not be
quite empty : that there should. still be a little food, and that this
should be substantial in winter, and light in summer.

Moreover, it is better to choose a time for exercise when one
is not hungry, and when one is hot and moist rather than cold and
dry. But the best time is when the state is. between the two.
Exercise in a man of hot and dry temperament may lead to illness,
and he will benefit by avoiding it at such a time.

745. It is necessary, then, for a person who is about to take
exercise that he should first get rid of the effete matters of the
body by way of the intestines and bladder. Should friction be
used in preparation for exercise, with the object of helping the
bowels and opening the pores of the skin, it should be earned
out with a rough towel, and be followed by inunction with sweet
(perfumed) oil made warm by being held in the hollow of the
palm. This inunction is done according to rule until the limbs

show a florid blush ; the massaging should not be too forcible, nor the penetration too great. It is done with the hands, which pass over many various positions in order to ensure that every part of the muscular system has been dealt with. When completed, the massage is stopped and exercise may begin.

746. Relation- to seasons. In spring, the best time for exercise is round midday, and it should be done in a moderately warm room. In summer, the exercise should be done earlier. In_ winter, it should be delayed till vespers, but there are other objections to doing so. Consequently, in winter, the place used should be made moderately warm, to enable the exercise to be carried out at a time- when the aliment is digested'and the effete matters have been expelled.

_747. Amount of exercise. Three things must be taken into consideration, ' (1) The colour. As long as the skin goes on becoming florid, the exercise may be continued. After it ceases to do so, the exercise must be discontinued. (2) Movement. Exercise may be continued as long as the movement is moderated..- (3) The condition of the members. Exercise must not be continued after they show any puffmess. Should the insensible perspiration lessen and the visible sweating stop, the exercise must stop. Should the action of the skin have ceased, one applies a strongly-diaphoretic oil as an inunction, especially if the exercise were one which exerted the breathing. (Restorative friction and massage will be needed : Aeg.)

748. At the conclusion of the first day's exercise, you will know the degree of exercise allowable ; and when you know the amount of nourishment the person can bear, do not make any change in either on the second day. Arrange that the measure of aliment, and the amount of exercise shall not exceed the limit ascertained on the first day.

4. Friction. Massage. Shampooing

" Abu Sir came to him and rubbed his body with the bag-gloves, peeling from his skin dirt-rolls like lamp-wick, and showing them to the King, who rejoiced therein . . . after which thorough washing, Abu Sir mingled rose-water with the water of the tank, and the King went down therein. When he came forth his body was refreshed, and he felt a lightness and liveliness such as he had never known m his life." (Night 935). (Burton, v.

749. Varieties, {a) Hard Friction : this stretches and contracts, and braces the body, (b) Soft Friction has a relaxing effect, (c) Re-

peated friction diminishes
the fat of the body.
(d) Moderately hard fric-

Friction (massage) before (left) and after (right) t ion increases the bulk of
the bath. From a woodcut of date 1533 . . ,

(Martin 52 , p. 171). the body.

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Combination of these will give nine varieties [" much and hard, much and soft, much and moderate ; little and hard, little and soft, little and moderate ; moderate and hard, moderate and soft, moderate and moderately hard" (Aegmeta).]

(e) Rough friction. This is done with rough towels. It draws the blood rapidly to the surface. (/) Gentle friction. This is done with the palm or with soft towels. It draws the blood together and retains it in one member.

The object of friction is to render thin persons heavier, and heavy persons thinner ; to brace flabby persons, and to modify those who are not pliable enough (giving tone to the body). _

(g) Friction as a preparatory to athletics. The friction begins gently, and then becomes more vigorous as the time approaches for the exercise.

(h) Friction as a sequel to athletics — Restorative friction. This produces repose. Its object is to disperse the effete matter formed in the muscles and not expelled by the exercise. It causes them to disperse and so removes fatigue [the feeling of lassitude]. Such friction is soft and gentle, and is best done with oil [or perfumed ointments : Aeg.]. It must not be hard, or heavy, or rough, because that would roughen the members. Young men would be hindered in growth. But for adults it is less harmful.

750. It is less detrimental to err on the side of hardness than on that of softness, because it is easier to correct undue dispersal [of effete matters] than to prepare the tissues (by soft friction) for the reception of effete substances. On the other hand, hard and rough friction to an excess in youths is a hindrance to their growth.

You will learn about this under the heading of " the proper

time for friction." For the present it will suffice to say that

restorative friction should be begun vigorously at first, and with

oil ; that then it should be moderated, but not stopped, until

all roughness has gone. It is best that many persons should do

it together. The person, having been rubbed, now stretches

out his massaged limbs to help to expel the effete matters from

them, and a broad bandage or binder is applied over the regions

to which the muscles concerned belong. He should hold his

breath as long as he can, while relaxing his abdominal muscles ;

he should at the same time make his thoracic muscles tense,_ if

he can. Finally, he makes his abdominal muscles tense again.

In this way the intestines are given a certain amount of restorative

friction, One may pause to take breath between the exercises ;

or sometimes restorative massage may be given in the middle

of the exercise. Thus, it may be omitted or resorted to, according

to whether the exercise is to be prolonged or not. A person who desires restorative friction does not need much preliminary friction, unless there is something about his condition with which he is not satisfied. If he does not desire restorative friction he will undergo more thorough preliminary friction. If fatigue should be experienced, inunction with oil will be employed, as we have stated. If he should experience a sense of dryness, the friction will be increased until the natural mean condition is attained.

Friction without massage (compression) is beneficial if sleep is. due, because it cheers the body and prevents humid, matters from flowing into the joints. '

5. On Various Uses of the Hot Bat

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751. For the type of person whose regimen we are discussing, a bath which induces resolution is not required, because his body is inwardly pure. A person does not need the bath except in order to derive a gentle warmth from it, and a moderate amount of moisture. That is why such persons should not stay long in it.

If such persons employ a full-length (copper) bath, they should stay in it only until the colour of the skin becomes red, and the skin becomes puffy ; they should leave it as soon as dispersal (of humours) begins. The surrounding air should be moistened by a sweet-water spray. The actual washing should now be quick and the bath left quickly.

A person should not go into the bath immediately after exercise. He should rest properly first.

752. The forms of bath have already been referred to, and are dealt with again in another place. At this point we should state that all who propose to bathe should pass through the successive rooms of the bath-house according to rule, and not linger in the hot room long enough to cause harm; they should stay long enough in the rest-room* to give time for the dispersal of the effete substances, otherwise there is a risk of weakness which will interfere with alimentation and leave a susceptibility to the causes of septic fevers.

* The inset depicts the interior of the rest-room of the Sultan's private baths at the Alhambra Palace.

753 A person who wishes to become stout should take his bath 'after a meal, if he is not likely to develop obstructions in consequence. If he is of hot temperament, he may guard against the formation of obstructions by drinking oxymel. It he is of cold temperament, he should take pennyroyal and

capsicum. , .

If it is desired to reduce fat, and to procure the resolution of the humours, the person should bathe while fasting, and stay

a long time in the bath. , , • » t-

754 Precautions regarding food and drink. lo ensure against impairment of health the. bather should wait till after the gastric and hepatic digestions are both completed.

Where there is any risk of the bilious humour undergoing fermentative decomposition, and one wishes to bathe fasting, the aliment should be attenuant. But a person of hot tempera-ment' in whom the bilious humour is plentiful, should not enter the hot chamber at all. The best things for such persons to take are : bread soaked with the juice of fruits or rose-water. Cold drinks should not be taken either while in the bath or when leaving it, for the pores are now open, and coldness would speedily enter and pass towards the principal organs and damage their functional capacity. Articles which are very heating ("hot") should also be avoided, especially water— because thereby there is a risk of the warmth penetrating rapidly to the principal organs and this predisposes to wasting and hectic. Further, such persons should take care not to leave the bath suddenly, or to uncover the head, thus exposing the body to cold. If it is winter, the body should be well covered with towels.

755. A person suffering from fever should avoid the bath at the febrile period. The same applies to a person suffering from any form of loss of continuity, or from inflammation.

756. From the above, therefore, it will be clear to you that baths have the following effects : warming, cooling, humectant, desiccant, beneficial, harmful.

Beneficial effects : the induction of sleep ; aperient action; abstergent action ; resolvent action ; digestive ; drawing nutriment to the surface of the skin. But the resolvent effect only occurs if that is desired ; the excretory effect occurs only through the natural channels. Baths are beneficial for constipation and for removing lassitude.

' Injurious effects. The heart is weakened if the person stay too long in the bath. The bath produces syncope and nausea, and sets stagnant humours in circulation, and disposes them to

undergo putrescence, and to pass down into the weaker members, with consequent inflammatory deposits in both internal and external members.

6. On Ablution with Cold Water

§ 244: It may be noted that ablution with cold water constitutes part of the ritual of Mohammedan prayer, and imparts a sense of cleanliness besides helping to preserve the physical health.

The medicinal use of affusion, cold sponging, and cold packs will be thought of under the present heading.

Whereas hot water is debilitating, cold water is strengthening. The addiction to the hot baths of the Hammans in Turkey has been held by some Mussulman writers to have been detrimental to the virility of the race.

757. This form of ablution is only beneficial if all the proper rules are observed, and if the age of the person, his physique and build,-; are suitable, and the season* is appropriate (i.e. the summer). The contra-indications are : nausea, or a feeling of satiety associated with indigestion ; vomiting ; or diarrhoea ; or want of sleep ; or nasal catarrh. The person must not be at the age of boyhood, nor at old age. [Therefore he must be in the prime of life.] The moment chosen for the ablution should be one at which the body is light and the movements appropriate.

Ablution with cold water following upon one with hot water. — The object of this is to make the external parts stronger, and to retain the natural heat. For this purpose the water used should not be very cold, but of a medium temperature.

758. Ablution with cold water after exercise. — Here the preparatory friction should be more vigorous than usual. The customary inunction with oil is employed as well before the exercise, which must be less vigorous than usual. The exercise completed, the person plunges into the cold water tank, so as to harden all the members at once. He stays in the cold water in proportion to his lightness, and as long as he can without shivering ensuing. Then, having come out of the water, let him be rubbed as we have described (i.e. till the skin is red), and let him take more food than drink. The time which elapses before the natural colour returns to the skin must be noted, because if the colour returns rapidly, the duration of the cold bath was reasonable, whereas if there is delay, it shows that the

stay in the water was too prolonged. In this way the person will know the proper duration of the bath for the future.

* It has been a widespread belief that the atmosphere in springtime affects open waters, so that it was healing and strengthening to bathe out of doors at this time. (Martin, 52 , p. n).

Should the person wish to re-enter the water after the friction, and after regaining his colour and normal heat, he must on this occasion enter the water gradually, and on a hot summer's day before the hottest part of the day, and when no wind is blowing. He must not do so when in a state of lassitude after coitus, or after a meal which has not had time to digest, or after emesis, or after evacuation of the bowels, or after gastro-enteritis, or insomnia, or if the body or stomach be enfeebled.

Cold bathing should not be done after exercise except in the case of the very robust. Even then the rules which we have given should be followed. To use cold baths in the ways we have named drives the natural heat suddenly into the interior parts, and then invigorates the strength, so that the person should leave the bath twice as strong as when he entered.

§ 245 . — Sea-bathing. — Modern advice follows the same rules as above. Namely, do not enter the sea too soon after a meal, or if not feeling quite fit. There is otherwise a risk of cramp. The sea should not be entered in the early morning unless one is very healthy. — To enter the sea too often in the day (more than twice) has a decidedly weakening effect. The best time to bathe in the sea is the warm afternoon, two hours after a meal. The proper thing to do after the bathing is to rest — not to run about on the sands. (Remember sharks.)

7. The Regimen in regard to Food and Drink (Comestibles and Potables.)

" The stomach is the house of disease and diet is the head of healing ; for the origin of all sickness is indigestion, that is to say, corruption of the meat m the stomach" (Night 452).

§ 246— Meal-times, — Burton (vi. 111) mentions "breakfast" (Arab, futur) which is eaten immediately after the dawn-prayer, except in Ramazan. This is a substantial meal of bread and boiled beans, eggs, cheese, curded milk and the pastry called fatirah, followed by coffee and a pipe.— Lane 159 (i. 169) mentions "dinner" as being taken after the noon-prayer, and states that a single meal may be taken before noon instead of these two meals. The principal meal is supper, which is taken after the sunset prayers.

759. In seeking to maintain health care must be taken that the essential basis of the meal is not in medicinal nutrients like potherbs, fruits, and such-like. For things which are tenuous in character over-oxidize the blood, and those which are dense render the blood phlegmatic, and the body heavy.

The meal should include : (i) flesh, especially kid of goats,

veal, and year-old lamb ; (2) wheat, which is cleaned of extra-
neous matter and gathered during a healthy harvest without
ever having been exposed to injurious influences ; (<fi sweets
of appropmto temperament ; (4) fragrant wine of good quality.
Any other lands of food can only be regarded as a sort of medica-
ment or preservative.

The more nutritious fruits are : figs, grapes (ripe and sweet),
dates from countries and regions in which they are indigenous!
But if superfluity arises after partaking of these fruits, speedy
evacuation should be procured.

760. -In winter the food should be hot ; in summer cold
or only sightly warm. A food should not be served either hot
or cold if it is likely to be spoiled thereby.

761 A person should not eat unless hungry. Nor should
he delay his meal until the appetite has passed off. This rule
does not apply m the case of the fictitious appetite met with in
drunkards or the subjects of nausea. If fasting be continued,
the stomach will fill up with putrescent humours.

Nothing is worse than to eat to repletion during a time of
plenty after having been in a state of starvation during a time
or famine and vice versa. But the transition period is the worse
*or we often see many people who lack food at a time of famine'
and eat to repletion when a fertile year comes, with fatal result!
Irf-eat repletion is very dangerous in any case, whether in regard
to food or to drink. For how often do not people over-eat
the bod 1 *? 1 thC C ° nSec l uent chokin g of the channels of

762. _ An error in eating or drinking any of the medicinal
, nutrients is to be corrected according to the digestion and
maturation thereof, and the person must be protected from the
intemperament which is likely to arise. To effect this, one takes
the con rary substance until the digestion is completed. Thus
if the aliment was cold (e.g. cucumber, gourd), temper it with
its opposite (e.g. onions, leek). If the aliment was hot, temper it
with the opposite (e.g. cucumber, purslane). If the aliment
is binding take some food which will open and evacuate,
and then fast for a suitable period. A person in this state—
and this is true for all who wish to maintain their health— should
not partake of food until there is a definite appetite, and unless
trie stomach and upper small intestine have emptied themselves
of the previous meal. For there is nothing more harmful to

the body than to superpose aliment upon incompletely digested
food. There is also nothing worse than nauseative indigestion,
especially when this is the result of bad foods. _ For if these
are gross, the following symptoms and illnesses arise : pains m
the joints, in the kidneys ; dyspnoea, podagra, indurative en-
largement of the spleen and liver, illnesses in which the serous
or ^atrabilious humours are concerned. If the foods were
attenuated, then acute fevers, malignant fevers, and grave acute
inflammatory disturbances would develop.

However, it is sometimes really necessary to give a food or a substance like food, on the top of another food, by way of medicine. For example, if one has taken sharp and salty nutrients, one may further take humectant aliments which have no flavour, before the former have digested completely. The, chyme by which the body is nourished is then rectified. This is a suitable measure for cases of this kind, and the use of exercise is not indicated.

The contrary holds good in the case of those who partake of gross foodstuffs and afterwards admix with them something which is speedily digested and acrid in taste.

763. A small amount of movement or activity after a meal allows the food to descend to the fundus of the stomach, especially if after this there is a desire to sleep. Mental excitement or emotion ; vigorous exercise ; these hinder digestion.

764. In winter, feebly nutrient foods, like pot-herbs, are not to be°partaken of. The aliments should be stronger and more solid in texture — such as cereals, legumes, and the like. In summer, the contrary is true.

765. The quantity of food taken at a meal. — Mo meal should be bulky enough to completely satisfy the appetite. One should rise from the table while some appetite or desire for food is still present. For such remnants of hunger will disappear in the course of an hour. Custom is to be regarded in this regard, for a meal is injurious when it brings heaviness to the stomach, and wine is injurious when it exceeds moderation, and swims in the stomach.

If one ate to excess one day, one should fast the next, and a longer sleep should be taken in some place which is neither hot nor cold. If sleep refuse to come, one should take gentle walking exercise and allow neither rest nor recumbent position. A little pure wine should be taken. Rufus says, " Walking after a meal is grateful to me, for it gives a good preparation for the evening meal."

A short sleep. after a meal is useful ; one should lie first on the right side, then on the left, and finally turn back again to the right side. If the 'body'' be covered with a number of wraps and the neck be raised, this will aid digestion. The limbs should slope downwards and not upwards.

The standard size of the meal depends on usage and vigour. A normally robust person should take as much as will not produce a sense of heaviness, or a sense of tightness of the hypochondria. There^ should be no subsequent rumbling in the stomach, or splashing of the food on bodily movement. Nausea should not be experienced, nor a canine appetite, nor loss of appetite, nor great disinclination for exertion, nor sleeplessness. The taste of the food should not repeat in the eructations. If the taste of food lingers in the mouth a very long time after the meal it shows that the latter was too heavy.

766. Indications that the meal was moderate : the pulse does not become full ; the breathing does not become shallow. The latter only occurs if the stomach is compressing the diaphragm, thus making the inspirations shallow and short. The pressure to be met by the heart increases after a large meal, and as the force of the heart does not diminish, the pulse becomes large and full.

A person who experiences a sense of heat and flushing after a meal should not take a whole meal at one sitting, but partake of the food in small portions at short intervals to avoid the effects of repletion — such as shivering followed by a sense of heat like that in a sthenic fever. This is due to the heating effect of the food.

A person who cannot digest the amount of food appropriate^ for him should increase the number of articles of diet, but diminish the quantity.

A person of atrabilious constitution needs a diet which is very humectant but not very heating.

A person of choleric constitution needs a diet which is humectant and infrigidant.

A person who generates hot inflammable blood needs feebly nutritious articles of food, which are cold. One who generates phlegmatic blood needs feebly nutritious articles of diet which are hot and attenuant.

767. The order in which the components of a meal are to be taken. — A person who is desirous of maintaining his health needs to be watchful of this matter. Thus, one should not 'take a tenuous food, which is rapidly digested, after taking a very

nutritious dish which is slowly digested. An exception to this rule has been named above. The reason is that the first article of food will be digested first an'd therefore float over the other, unable to enter the blood. Consequently it ferments and decomposes, and in addition sets up decomposition of the food next taken. .The reverse order, therefore, is the one to adopt, so that the labile food will pass on with the other into the intestine, and then undergo complete digestion.

Fish and similar articles of food should not be taken after laborious work (or exercise), because they undergo decomposition and then decompose the humours.

Some persons may be allowed to eat an article, of food in which there is a styptic property as a preparatory to the actual

meal.

768.-; Idiosyncrasies. Some persons have an idiosyncrasy of the stomach in which the foods leave it very rapidly, and do not stay in it long enough to undergo gastric digestion. This explains the necessity for taking the idiosyncrasy of the stomach and its temperament, into consideration [along with other factors

when drawing up a dietary].

There are some persons in whom tenuous food, instead of being digested quickly as it should, undergoes decomposition in the stomach, whereas less rapidly digestible foods are digested more readily. The stomach of such a person is designated igneous. But other persons are exactly the opposite. Therefore the rules to be given must be adapted to the peculiarity of each

(patient).

769. The countries in which people live have also their own natural properties, which are distinct from the ordinary rule. This must also be borne in mind, and a test must be made to ascertain what the rule should be. Thus, a food which is often used, though injurious to a certain degree, may be more appropriate for a given individual than a food which he does not often take, though its character is good.

" The best food of every people is that which grows where they live : oats— that is, porridge— for Highlanders ; wheat for the centre of Europe ; rice for the swamps of the Far East; etc. But in these days of easy and quick transport, any foods can be obtained in any part of the world, and peoples are enabled to partake of foods unnatural for them." 123 (p. 1077).

770. Then again, there is a food which is to be regarded as appropriate to everyone's physique and temperament. To change from such a diet would prove injurious and detrimental

to him.

Good and laudable foods may be injurious to some. They

should therefore avoid them. But persons who are able to digest " bad " foods should not be.deceived, because (for all they know) they will some day give rise to bad humours and the consequent obstinate ailments.

Good food may often be allowed liberally in the case of persons in whom the humours are unhealthy, so long as diarrhoea from intestinal weakness does not supervene in consequence. But if the person be of spare habit, and liable to have the motions loose, the diet should consist of moist aliments, because they are digested quickly, even though it is a fact that such persons can tolerate various heavy foods, and are less liable to be affected adversely by intrinsic noxae, and are more susceptible to the antagonistic influence of extraneous noxae.

771. -"An active person accustomed to take much flesh-meat needs frequent bleeding. A person inclined to be frigid in temperament should drink substances which cleanse the stomach, intestines and the (mesenteric) veins — including confections of spices and myrobalan electuary.

772. ^ It is a bad practice to combine nutrients of diverse character in one meal and so prolong it. For by the time the last portion has entered the stomach, the first portion is already digested, and therefore the various contents of the stomach are

not all at the same stage of digestion.

773. Palatability. One should remember too that aliment is best which has the most agreeable flavour, for the walls of the stomach and the retentive faculty jointly apply themselves better to a food of good substance, and the efficiency of the retentive power is assisted when the principal members all mutually concur — the temperament of one being not more divergent from that of another than natural. That is the requisite condition. The conditions are not fulfilled, for instance, if the temperaments are not normal, or alike in the respective members. Thus, the temperament of the liver may differ to an unnatural extent from that of the stomach.

Among noxious influences arising from the taste of aliments is that if very gross aliments are tasty, a person may be tempted to eat too freely of them.

774. In taking successive satiating meals, it is best for a person to take only one on one day and two on the next (mornino- and evening). But one must not be too strict in this rule, for if a person is accustomed to have two meals a day, and then takes only one, he will be weakened and his (digestive) faculty will suffer. A person of weak digestion should take two meals a day,

lessening the amount partaken. On occasion he may eat once a day. A person who, is accustomed to take one good meal a day will, on resuming the habit of two meals a day, suffer from weak- ness, lack of energy, slackness. If he should take no food at bedtime, he will feel weak ; and if he should take a late meal he will- not be able to digest it, and will have acid eructations, nausea, bitter taste in the mouth, loose bowels and become moody, or irritable. This is because he has put into the stomach some- thing to which it is not accustomed, and so he is liable to show some of the symptoms which befall a person whose aliment is not fully digested. — And these you are now acquainted with.

775. Among the symptoms arising when a person does not take a late meal are : subjective sensations at the cardiac orifice of the stomach, gnawing pains, a sensation of a void in the stomach' so that all the interior organs and intestines feel as if they were suspended, and therefore all clumped together. He passes scalding urine, and the faeces produce a burning sensation as they are passed. There may be a feeling of cold mthe ex- tremities owing to the bilious humour being poured out into the stomach and irritating it and making it congested. This is more likely in persons of bilious temperament, and in those who have bilious humour in the stomach but not to an undue extent in the rest of the body ; these suffer from loss of sleep, and keep turning over from one side to the other [in bed].

776. Persons then in whom the bilious humour is apt to accumulate in the stomach should take their meals divided, thereby taking the food quickly ; the meal is taken before bathing. In other persons exercise should be taken first, then the bath, and then the meal. The meal should not precede the bath in these cases. If circumstances demand that the meal be taken before the exercise, the food should consist of bread only,

and to an amount no greater than can be easily digested. As it is necessary that the exercise should not be gentle if taken before food, so it is necessary that the exercise should be mild and gentle if it is taken after the meal.

When the appetite is depraved so that it prefers sharp-tasting things to sweet or unctuous things, nothing is better than to procure emesis with such as oxymel with radish after fish.

777, A person who is stout should not eat at once after a bath, but should wait and take a little nap. He is best advised to take only one meal in the day.

778. One should not go to sleep immediately after a meal, with the food still swimming in the stomach, and one should, as

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much as possible, abstain from much exercise after a meal, lest the food pass into the blood before it is sufficiently digested, or glide out of the stomach without 'being digested at all, or undergoes decomposition, since the exercise disturbs the gastric temperament.

779. Nor should much water be drunk after a meal, for it causes the food to leave the coats of the stomach and float about One should wait, and not drink fluids until the food has left the stomach— which is evidenced by the sensation of lightness in the upper part 'of the abdomen. However, if there were urgent thirst one may take a modicum of cold water through a straw and the colder it is the less one will' require. Such an amount would soothe the stomach and keep the food together.

"Neither drink (water) immediately after leaving the Hammam nor after eating (except- it be after the lapse of fifteen minutes for a young man and forty for an old man), nor after waking from sleep " (Night 452) Y

l^hter Jn,?^ ^ IZ^f ^ e t ting ' and then drink > the drink * s sweeter and I 8 ^J^ f digestible to him than at another time, and there ascends to him

a pleasant fragrance and a penetrating," as quoth the poet : " Drink not upon thy food m haste but wait awhile, else thou with halter shalt thy frame toXknesI lead: And patient bear a little thirst from food, then drink." (Night 451; Burton)

780. To sum up' — if a person must drink, it is better only to take so small an amount, at the end of the meal (not during the meal), as will spread over and moisten the food, and therefore not be injurious.

To go to sleep while thirsty, is beneficial to cold and moist temperaments, but is injurious to those in whom the temperament is too warm, because of the bilious humour (being too plentiful). The same is true as regards going to sleep while fasting.

Bilious humour comes to predominate in persons who fast and therefore flows into the stomach. Therefore when they eat any food it decomposes, and the same symptoms occur in them, whether asleep or awake, as when food corrupts. And, furthermore, there is loss of desire for food.

781 . When there is loss of appetite for food something needs to be given to counteract this and relax the bowels. For this purpose something mild, like prune, should be given, or something which does not suggest nausea, like a laxative fruit-juice (manna). Meals may be resumed after the appetite has returned. Those whose tissues are moist in virtue of natural humidity are liable to speedy aperient action, and are in consequence not able to fast as long as those whose tissues are dry in virtue of only a small (degree of natural) humidity :— unless the latter should be rich in humidities other than those inherent to the substance of the tissues, for these are proper, good and receptive, and in

consequence the natural faculty is able to change them completely into (true) nutriment. _

782 To take wine after a meal is very unsatisfactory, tor it is rapidly digested and enters the blood quickly and carries food on into the blood before it is properly digested. Obstructions and decompositions [in this imperfectly digested aliment

ultimately] arise. "

Sweet things readily produce obstructions [in the channels of the bodyl because the attractive faculty draws them mtothe blood before they have been properly digested. Obstructions culminate in various diseases, of which dropsy is one.

Heaviness of the air or water, especially that of summer-time, favours the decomposition of food. In this case, then, it is not harmful to take a tempered wine after a meal, or hot water in which xylaloes and mastic have been boiled. . u , „ ,

783 If a person whose alimentary tract is hot and strong, should eat heavy food, it will give rise to flatulence m the stomach and fermentative ailments.

When a person takes a tenuous article of food upon an empty stomach, the latter contracts on it, and if he then takes something heaw the stomach abandons the tenuous food and ceases digesting it, and it undergoes putrescence in consequence. I his would be avoided by allowing an interval of time to elapse between the two kinds of food. Under these circumstances it is best to take the heavy food slowly, because then the hold which the stomach has on the tenuous food is not broken.

S2A7 The principle is that the food should be held close to the mucous membrane all the time. This is what is done by the « attractive faculty." The stomach " holds " the food close to its mucosa as a mother holds the babe to her breast ; the pylorus keeps tightly closed until it is time for the gastric contents to pass on, on the sf me principle as applies in the case of the os uten which does not open until it. is time for the uterus to evacuate itself , or in the case of the bile-papilla, which remains tight until the time comes for bilo *o be passed into the duodenum. The gall-bladder also keeps (tonxally and) accurately applied to its contents m a similar way. In each case the retentive faculty operates until the expulsive faculty is called upon, and vice versa. Modern physiology regards it all as mechanical, comparing everything to the test-tube experiments ; but

it is actually vital-one might almost say purposive— it is as much purposive as the grasp with which the coelenterate holds its prey ^

Once a gap is allowed to intervene between the food attracted or grasped by the mucosa, then digestion stops and the food particles clump up and swim about in bits in the fluid, and then putrefy. One might picture the normal process as one of apposition to the

mucosa as the limpet shell is affixed to the rock ; that fluid may be allowed to separate off the film of food from the mucosa by mis-management, and that when it does so at one spot, the whole film will peel off, and folds up or breaks up. Once this has done it is hopeless to restore it again to its previous position, and " indigestion " is definitely the fate of that meal.

784. ' When a -state of over-repletion exists in regard to some meal, whether as a result of exercise (which causes undue hunger), or because a draught has been taken as well, then there will be a need for rapid emesis. If this should fail, or one cannot vomit, .the person should sip hot water until the repletion is displaced and sleep supervenes. The person should therefore lie down and (compose himself to) sleep. Let him sleep as long as he will. — But should this not suffice, or should he be unable to go to sleep, . ; reflect whether the natural course of events is likely to save you from procuring emesis. If so, good. If not, assist the natural power by any gentle laxative, such as myrobalan electuary, confection of roses, or origanum prepared with sugar or honey ; or by the use of such things as cumin, spiced candies, asphodel and cabbage ptisan.

It is not as bad to be repleted with wine as with solid food.
785. Among the (aperient) remedies which are suitable after food are : aloes to the bulk of three chick-peas ; or half. a drachm of aloes, half a drachm of mastic, and a sixth of a dram of nitre. Mild remedies are : turpentine resin to the amount of two or three chick-peas ; nitre in equal quantity, or less, if necessary. Another much praised remedy is to use an epitheme with wine (821, 839).

If none of these remedies succeed, let the patient sleep for a long time, and abstain from food for a whole day. Then, if he feels better, let him bathe, and place a hot blanket over the abdomen, and see that the aliments are tenuous.

If the food is still not properly digested, in spite of all these measures, and heaviness, distension, and lack of energy are experienced, you may know that the veins are already over-charged with effete matters. Bulky and unneeded nutriment, even were it digested in the stomach, would hardly undergo the proper changes in the veins, and so would remain " crude " within them, and stretch them, even to bursting point. This is the explanation of the lack of energy, the heaviness, the desire to stretch. oneself and the yawnings. The treatment in such a case consists in securing the release of the superfluities from the blood vessels.

' - If these are not the symptoms, but there is only a transient weariness, followed later by another form of weariness, this should be treated in : the manner to be described. . '

786. If a person should be very advanced in years,_and his. body does not derive as much benefit from the food as it did when he was young, and if his aliments become simply effete matters, then he should not eat as much as he used to do.

787. If a person is accustomed to a heavy diet and then lightens it by the use of attenuant foods, the new food material is- unable to keep the channels (of the body) as full as before. So, on resuming the heavy foods, obstructions are brought about..

788. Heating foods. The injurious effects of heating or calefacient foods can be corrected by the use of syrup containing acetic acid, especially when made with seeds, for then the syrup- is mora efficient. If honey is used however, the simple syrup will suffice. The injurious effect of " cold " foods is corrected by the use of hydromel, and its syrup, and caraway.

789. Heavy and Light Foods. To correct aliments which are heavy, a person having a hot temperament should use acetous syrup made of strong seeds ; a person with a cold temperament should use a little capsicum or peppermint.

Tenuous foods are better for the health, but less valuable for the vegetative faculties and strength. Heavy foods have the opposite value. Hence, for a person in need of a tonic, aliments which make strong chyme are necessary, and such as antagonize the hunger-feeling. But they should not be taken in greater quantity than can be digested. Heavy foods are better borne by those who take plenty of exercise or are accustomed to heavy work. Probably the deep sleep which this favours helps the digestion. But on the other hand they lose much by sweating. And as their livers seize whatever of the aliment has not yet digested fully, this paves the way for fatal illnesses towards the end of life, or at the beginning of life, the more so because they trust in their digestive powers too much. This power is really due to the deep sleep which is customary, and that is lost by

old age.

790. Fruit. Fresh fruit is only good for those who carry out hard work, or take much exercise, or for persons with plenty of bilious humour, or during the height of summer. Fruit should be taken before a meal, — namely, for instance, chrysomela, mulberries, melons, peaches, and prunes. But it is better to regulate oneself by using other articles of food than these, for they render the blood too watery, and so it is apt to ferment.

Hence the juices of fr.uits, unless taken at a seasonable time, pave the way for putrefactive processes. So, too, any food which comes to burden the blood with '' crude " humour has this effect, though it is true that sometimes such a; food may 'be beneficial (e.g., cucumber ; c. anguinalis). That is why people who make

use of such aliments, even though they-are primarily infrigidant, are likely to develop febrile diseases.

You will also realize that it is when watery humour is not dispersed, but lingers in the blood-vessels, that it usually becomes toxic. However, when exercise is taken before such aquosities have become aggregated, and exercise is taken immediately after eating the fruit, these aquosities will disperse and the noxious effect of the fruits is thereby lessened.

Note too that the presence of " crude " serous humour or of wateriness in the blood prevents the nutrient part of the food from adhering to the tissues, some of the nutritive value of the food being lost in consequence.

_A person who partakes of fruit must (therefore) take walking exercise afterwards, and then eat something which will cause the (aquosities) to flow out.

791,, Aliments which give rise to (1) wateriness .; (2) " crude," raw, immature humour ; (3) gross humour, and bilious humour, give rise to febrile diseases. This is because (1) the watery parts permit putrescence to occur in the blood ; (2) viscous gross substances close the orifices (of the juice-canals) ; and (3) the (increase of) bilious humour adds to the heat of the body, and renders the blood sharp.

Bitter pot-herbs are sometimes very advantageous in winter-time, just as tasteless herbs are beneficial in summer-time.
792. Correctives of unwholesome foods. If a person is bound to partake of unwholesome aliments, he should do so seldom and sparingly, and should counteract their action by combining with them something of contrary effect. Thus, if a certain sweet food is injurious, he may counteract it by a sour aliment like vinegar, and pomegranate, and an acetous syrup prepared with sour wine and quince and the like, and also by procuring evacuation. Should it be a sour aliment that is injurious to him, he may follow it up with honey, or old wine, taking this before the maturation and digestion of the former are complete. If it be an oily aliment that is injurious, this can be corrected by (a) pungent articles, like chestnut, myrtle-seeds, carob bean of Syria, the fruit of the sidr tree, medlar ; (b) bitters, such as conserved elecampane ; (c) salt and sharp substances, like

capers, onions, garlic [that is, articles usually belonging to the second course of a meal], and other contraries.

793. If the body is in- a state of repletion by unhealthy humours, this state may be counteracted by a liberal allowance of commendable attenuant aliments. If the body is one which is easily purged, moist and easily digested food should be made use of.

Galen says that a humid article of food is nutrient when it is separated from all other qualities, and is as it were tasteless — being neither sweet nor sour, bitter nor acrid, pungent nor salt.

794. A heavy food which is divided up into small portions will be better borne than one which is taken solid.

If .dry aliments be taken plentifully, the strength will fail and the colour will fade, and the " nature " become dry.

Fatty food produces lack of energy and vim, and creates a false appetite. " Cold " food produces lack of vim and is infrigidative (or, attenuant). Sour food has the same effect as old age ; it dries the body and makes it lean. Sharp and salt food is injurious to the stomach. Salt food is bad for the eyesight.

If an appropriate aliment is oily, and is followed by an uncommendable aliment, the latter will decompose it.

Viscous aliment experiences delay in passing through the intestine. Citrul [a species of cucumber] passes down the intestine more rapidly if the rind is taken as well than if first peeled. Bread also passes down more quickly if the crust be taken as well than if it be deprived thereof by crumbling it through a sieve.

If a fatigued person, -who is accustomed to a mild regimen, should take heavy foods — as for instance, a dish of rice with soured milk — after a long fast, it will come about that his blood becomes sharp in quality and as if ebullient. Hence reducing regimen would be indicated (e.g., blood-letting), though only to a moderate extent. A similar remedy is applicable when a person is angry.*

Note too, that sweet aliment accelerates the " nature " before the food is matured and digested, and the blood is tainted in consequence.

795. Incompatibilities between foods. Certain rules must be noted in regard to combining various articles of food. Indian observers and others have long taught that (i) milk must not be taken with sour foods ; (2) fish must not be taken with milk' —

* Quick-tempered ; the bilious humour easily becomes dominant or astir.

for in that case chronic ailments such as leprosy* may develop; (3) Pulse must not be taken with cheese or radishes or with the flesh of flying birds ; (4) a polentaf of barley-meal should not follow on a dish of rice made with soured milk^ ; (5) eatables should not have oil added, or oil which has stood in a brass vessel ; (6) fleshmeat should not be taken when it has been roasted over live coals- (with certain herbs).

_ 796. Courses of a meal. To have several courses to a meal is injurious in two directions : (*) the rate of digestion is diverse, for _ the part that digests more speedily is admixed with a part which is not yet digested ; (b) a person may eat too much of one dish._ Already in ancient times, too, persons who had been exercising themselves avoided this error, being satisfied to partake of meat alone- in the morning, and bread alone at supper-time. During: the summer it is best to take the (main) meal at an hour when the temperature is cooler.

During a period of fasting the stomach sometimes fills with unhealthy humours.

Note further that when meat is roasted, and taken with onions and eggs [a special recipe ' kabab'§], it is very nutritious ; but it is slow in passing through the intestines, and lingers in the caecum. _ White soup [a Syrian dish containing rice, honey, onions] _is nourishing, and when onion is added it dispels flatulencies ; if onions are omitted, borborygmi arise.

Some people consider that grapes are good to take after roasted meats ; but the contrary is really the case ; they are very bad indeed. So too, is a dish containing dates, figs, and the like. But (dry) pomegranate seeds are good.

Fowl. — The flesh of partridge is dry and constipating ; but that of chicken is moist and relaxing to the bowels. Roast fowls are better if they have been prepared (stuffed) in the belly of a kid or lamb (see § 25 1) because that preserves their moisture. Chicken-broth tempers the humours strongly ; more so than fowl-broth, though the latter is more nutritious.

Ti,„/ Tw0 - k £ d l2 f J, e P ro fy are distinguished by the Arabs :— baras and juzam. The former is white, and the other " black." The latter is leprosy of the joints Both are ascribed to dietetic errors, especially fish-eating, and milk-drinking. (Burton' 111.370). The term used m the present passage is juzam

_ t Polenta =sawiq =ptisane (Lane). This is native frumenty and green gram (mostly barley), toasted, powdered, mixed with dates or sugar and eaten on journeys when cooking is impracticable. It is carried in a meal-sac (Burton iv. 491). v '

1 Soured milk. This is milk artificially soured. It is eaten with rice and is a component of salatah, cucumber salad. (Burton, iv. 132; who adds, " all nomads who live on milk never take it fresh.")

§ Kabab._ This is mutton or lamb cut into small squares and grilled on skewers. It is the equivalent of our " roast meat." (Burton, iv. 154)

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Kid of the goats is better when cold than when warm because the steam quiesces it. The flesh of Iamb is better when hot because its unsatisfactory" odour is thereby dispersed

Meat boiled in water and vinegar [a Persian dishj should be served hot, and then needs no saffron in it. But if served cold saffron must be introduced.

Honey confections may be made with dates or wheat flour (sweetmeats); but they are unhealthy because they cause obstructions. and evoke thirst.

Bread' is an unsatisfactory food when it does not digest, more so than (flesh-food) when it does not digest.

8. Rules Concerning the Use of Water and Wines.

797 Water* is more suitable for attempered constitutions

when it is moderately cold, than when it has been cooled by the addition of snow, especially if the snow were not pure Even with good snow there remains the objection that that which passes out from it is harmful to the nerves and the organs of respiration and all the internal organs Moreover a person cannot tolerate it unless he is very full-blooded, and it will do harm sooner or later, even after the lapse of years.

Certain empirics assert that one must not mingle well-water with river-water, except by taking the one after the other has passed out of the stomach. .

We have already spoken about the properties and choice of waters and how to ' correct them when bad. Addition with vinegar rectifies unhealthy waters.

798 True and False Thirst. One should remember that it is very harmful to drink water while fasting, or after exercise, or after the bath, especially when either of these was carried out on an empty stomach. It is also harmful to gratify the false thirst of the night, like that from which drunkards or topers suffer, or when the vegetative power strives to accomplish digestion in the face of a preceding satiety with water. If the thirst be very urgent, the water should be such as has been exposed to cool air, and rinse out the mouth with cold water. If this is not effective, some water may be taken out of a vessel with a narrow mouth This is sometimes agreeable to a toper, who would not be hurt by drinking while fasting. If a person cannot avoid drinking

" * ■■ The usual beverage at meals is water, which is dru-k from ^oolmg, porous ^^e^sw^ ^ or

^Tdeiictus shSis made of a conserve of sugar and violet-flowers.

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while fasting, let him take water ; especially if he has been taking exercise. In this case, let him first drink wine diluted with hot water. . .. .

_ False thirst is relieved by going to sleep without quenching it with fluid. For during sleep the natural power disperses the matter which is the cause of the thirst, and it does this more effectively if the thirst was not yielded to by a draught. To attempt to allay false thirst by a draught, is to interrupt the digestive power, and the false thirst will return later because the humour giving rise to it is still there. When there is false thirst, water should not be taken rapidly and greedily, but through a straw.

799. It is bad to drink much cold water. If it is very imperative to .do so, defer it till after a sufficient meal.

Tepid water evokes nausea. Water warmer than that, if drunk frequently, weakens the [tone of the] stomach. But when taken infrequently, it washes out the stomach and opens the bowels.

Wine.
Lane 169 describes as the usual "wine" a preparation made by

using dry grapes or dry dates in water to extract their sweetness ;
this is allowed to ferment slightly until it acquires a little sharpness
or pungency. It was not kept after the third day. (i, 293). ■

Wine at parties was rather thick, and required straining before
use. This was because the wine was cured in vessels whose interior
had been coated with pitch (ib. p. 299.)

Virtues of Wine. — " As to the advantages that be in wine-
it strengtheneth the viscera and banisheth care, and moveth to
generosity and preserveth health and digestion ; it conserveth the
body, expelleth disease from the joints, purirleth the frame of corrupt
humours, engendereth cheerfulness, gladdeneth the heart of man
and keepeth up the natural heat ; it enforceth the liver and removeth
obstructions, reddeneth the cheeks, cleareth the brain and deferreth
grey hairs." (Night 452 : Burton).

800. White light wine is best for those who are in a
heated state, for it does not cause headache. But sometimes it is
humectant. It may relieve a headache when that is due to heat
in the stomach.

Instead of a light white wine, one may use a wine which has
been clarified by infusing honey or bread in it, especially if this is
done two hours before the wine is required.

Heavy wine, if it is sweet, is best for a person who wants to
put on weight and become strong. But he must beware of
developing obstructions. Old red wine is best for a person of
cold phlegmatic constitution.

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801 It is -bad to drink wine after any of the various dishes,
for the reason we have already explained. It should not be taken
till after digestion, the food having passed into the small intestine.
To drink wine upon food forming bad chyme, either during the
meal or before it has digested, is bad because it causes the bad
chyme to be absorbed and pass into the remote parts of the body.
The same is true if wine is taken after fruit, especially melons.

It is better to begin with a small amount than a large one.
To take two or even three glassfuls [= | pint, according to Lane]
upon a meal is not hurtful to anyone accustomed thereto, or to a
healthy person who has been bled.

802 Wine is beneficial for persons with a predominance
of bilious humour, because it gets rid of the excess of this by
provoking the urine. It is good for persons of humid tempera-
ment because it brings humidities to maturity. The better its
aroma (bouquet) and taste, the more beneficial.

Wine is also very efficient in causing the products of
digestion to become disseminated through the body. It cuts
phlegm and disperses it. It separates off the bilious humour and
draws it on into the urine. It renders the atrabilious humours
more mobile and able to leave the system. It counteracts the
harmful influence of this atrabilious humour by contrariety, and
it breaks up all entanglements without the necessity of extraneous

' The varieties of wine have been already enumerated in the

proper place. r .

803 Wine does not readily inebriate a person of vigorous brain, for the brain is then not susceptible to ascending harmful gaseous products nor does it take up heat from the wine to any degree beyond what is expedient. Therefore it renders his mental power clearer than before ; other talents are not affected in such an advantageous manner. The effect is different on persons who

are not of this calibre. .

A person who is weak in the chest, to the extent that winter-time is trying to the breathing, cannot [wisely] take much wine

804 A person who wishes to take much wine should avoid taking much food beforehand, and the components of the meal should include diuretics. If he should become replete with food or wine, he should procure emesis and take hydromel (= honey and water); then procure emesis again ; then wash out the mouth with vinegar and honey, and apply cold water on the face.

805 If wine has an injurious effect on the body and is heating to the liver, the diet should include some dish containing for

instance the juice of .(sour) unripe grapes, and the like, and the articles of food which are generally served with the wine after the end of a meal (dessert) should include such as pomegranate, and tart things like citron.

If the wine is liable to go to the head, one should take less and take it dilute and clarified. After the meal, he should take such as quince with his wine.

If the harmful effect of wine consists in being heating to the stomach, the dessert should include toasted myrtle-seeds ; and one should suck a few camphor lozenges and other astringent and acrid things.

Harmful action of wine.

Remedy.

Heats the body and the liver
Goes to the head
Heating to stomach
Cooling to stomach

Bitter fruit, e.g., unripe grape-juice ; the

dessert should be pomegranate ; citron.
Take the wine dilute and clear ; as dessert,

cydonia.
Toasted myrtle seeds ; suck a few camphor

lozenges ; astringents ; acrid things.
The dessert should include galangale, cloves,

orange-peel.

808. As you know, old wine is like a medicine. It is only feebly nutritious. New wine clogs the liver and produces a hepatic " dysentery " by giving rise to much gas.

The best wine to take is that which is clear, white, tending to a red_ tinge, of good bouquet, and neither tart nor sweet in taste, neither old nor new.

A good drink which is widely known is made as follows: take three parts of marjoram, and one of water. Mix well. Boil to a fourth.

" and the host set before him, in vessels of gold and silver and crystal, raisin-wine boiled down to one-third with fruits and spices." (Night 415, Burton).

807. If a gnawing feeling come on after taking wine, take pomegranate, cold water and syrup of absinthe next morning. Enter the bath after partaking of a small meal.

Wine which is thoroughly diluted softens the stomach, makes it humid and allays thirst. Diluted wine intoxicates quickly because the watery constituent takes it quickly into the blood.

808. The wise person will avoid drinking wine when fast-ing or .before the limbs have been refreshed in warm water, or after vigorous exercise ; for both these entail a strain on the brain and nerves, and render a person liable to develop cramp and

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amentia ; they produce either actual illness' or at least undue

heat.

809. Intoxication. Frequent intoxication breaks down the constitution of the liver and brain, weakens the nerves, and tends to produce diseases of the nervous system, apoplexy, and sudden

death.

When wine is taken to excess it is changed, m the case of some persons, into a bad kind of bilious humour ; or, in the case of others, into pure vinegar. In both cases, the changes in the stomach aire very injurious.

Some persons claim that it is an advantage^ to become intoxicated once or twice a month, for, they say, it allays the animal passions, inclines to repose, provokes the urine and sweat,

and gets rid of effete matters.

The most detrimental of the effects of wine is that upon the brain. That is why .those who are not strong in that way should take but the very least amount of wine, and diluted.

Treatment. If called to a person who has drunk wine to excess, emesis should be procured as speedily as possible. Failing that he may drink a considerable quantity of water, with or without honey. When emesis has been procured, he should bathe in a full length bath. Then he should be thoroughly rubbed with oil, and left to go to sleep.

810. To give wine to youths is like adding fire to a fire already prepared with matchwood. Young adults should take it in moderation. But elderly persons may take as much as they can

tolerate.

Wine is borne better in a cold country than in a hot one.

811 . If a person wishes deliberately to take his fill of wine, he must take no food, or anything sweet. The [Persian] " white broth " [made of meat, onions, butter, cheese, etc.] may be allowed ; also grated bread steeped in broth made with fat meat cut into pieces. He should have an inunction. He should avoid physical labour or exercise. Then after the meal, when he wishes to drink, he should accompany it with almonds, salted lentils, and a condiment prepared with salted capers.

It is an advantage to include in the menu cabbage boiled with meat ; olives boiled in water, and the like. For this conduces to drinking more wine. Anything which lightens the fumes of the wine is also helpful — for instance the seeds of ■Syrian beet ; cummin, dry rue, pennyroyal, Nabathean salt, cardamoms ; and more particularly, any aliments which are viscous . and glutinous, for they aggregate the fumes (e.g. oily,

sweet and viscous articles of food) and prevent inebriety in spite of drinking so much wine, by restraining the rapidity with which the wine enters the blood.

Inebriation is rapid (1) when there is weakness of the brain, (2) when there is an abundance of humours ; (3) when the wine is strong.; (4) when the food is scanty ; (5) when the regimen is itself depraved ; (o~) when the wine is taken continuously (for a long time).

When the cause of the ready inebriation is weakness of the brain, the remedy is to use the epithemes named in the chapter on catarrh, and give sedatives, and avoid fluids.

812. _ The following syrup averts inebriety : one part of juice of white cabbage; one part of juice of unripe pomegranate, a half-part of vinegar. Simmer. Take one ounce before taking the wine. The following is another remedy : pills containing salt, rue, black cummin. Eat pill by pill. The following is another.— Take seeds of Syrian beet, cummin, peeled bitter almond,

pennyroyal, absinthe, Nabathean salt, cardamom, dry rue.

A person who is not afraid of a " hot " mixture, may take two drams by weight in a draught with cold water, fasting.

813. Agents which restore from inebriety. Let the person take water and vinegar several times one after the other, or whey-water and junket. Let him sniff at camphor and sandalwood. Put cold repercussives over his head, such as rose oil and wine-vinegar.

The treatment of inebriety is discussed in the special part.

" He said : ' arouse him, O Sahim.' So he made him smell vinegar and frankincense ; and he cast the Bhang from his nostrils and opened his eyes " (Night 649). To this, Burton remarks : " acids have ever been and are still administered as counter-inebriants, while hot spices and sweets greatly increase the effect of Bhang, opium, henbane, datura, etc."

814. Anaesthetics. If it is desirable to get a person unconscious quickly, without his being harmed, add sweet-smelling moss to the wine, or lignum aloes.

If it is desirable to procure a deeply unconscious state, so as to enable the pain to be borne which is involved in painful applications to a member, place darnel-water into the wine ; or administer fumitory, opium, hyoscyamus (half-dram dose of each) ; nutmeg, crude aloes-wood (4 grains of each). Add this to the wine, and take as much as is necessary for the purpose. — Or, boil black ■ hyoscyamus in water, with mandragore bark, until it becomes red. Add this to the wine.

Burton, 104 (ii.478), commenting on the word tabannuj (hemp), which is an " anaesthetic " adds, " anaesthetics have been used in surgery throughout the East for centuries before ether and chloroform became the fashion in the civilized West." (Night 263.)

§ 248. Strictly speaking, instructions on diet to the patient should rest upon practical acquaintance with the culinary art^ as having a prior place over the questions of forbidding and. allowing such and such articles of food, food values, and the like. The form in which a given article in the dietary is to be given is of real importance, and the combinations into which the foods enter require notice at least to the same extent as is done with the ingredients of a medicinal prescription. Mutual decompositions occur with foodstuffs either before or after ingestion. Interactions may render the " composite " indigestible, or non-palatable, or actually harmful ; the use of too little of one ingredient in a recipe or of too much should be prevented ; the temperature to which the mixture is exposed —the rate at which that temperature is reached, whether too quickly or too slowly — whether it is maintained steadily or whether through some mismanagement the " mixture " was allowed to cool noticeably in the midst of the operations — all such details call for considera-tion both as to a possible explanation of persistent gastro-intestinal trouble, and as to guiding the management of any ailment in any

system or organ.

The displacement of materia medica from its ancient throne is partly to be ascribed to a cessation of attention to detailed knowledge about herbs* and the part which horticultural skill and care, as well as climatic conditions and geographical factors play in_ the production of efficacious remedies ; it is also ascribable to entirely insufficient attention to the preparation of the recipes — for these originally were exacting as to manner of compounding ; and both these types of indifference rest upon a scepticism as to the possibility of such details being of the least importance. In the absence of knowledge on these points, the decriers of the use of drugs, and of complex prescriptions speak unjustifiably.

So, again, in the matter of the preparation of the invalid's food, or the dietary for the chronic ailment, it is reasonable to plead for that care whose real importance is every day proved by those who, having the means, will desire their meals from some one chef in preference to some other.

§ 249. In the whole of the preceding chapter Avicenna is referring to a cuisine which is foreign to us. Perhaps of all European

* It has proved impracticable to include in this volume a translation of the second Book of the Qamm, which deals with this subject, and provides a text capable of thorough expansion and adaptation to modern requirements.

countries, Spain offers the nearest approach to his. Those who have been in the East, and have enquired into the practical details in their cookery recipes — not merely such as may be available in written form, but also such as are actually carried out in well-to-do establishments or by the humbler housewife, (for in this country also there is much difference between " Beeton " and actual practice) are more easily able to follow Avicenna's nomenclature.

§ 250. Very little research suffices to convince the enquirer of the very. great scope of this subject. Interesting as it is, it would therefore lead too far to attempt proper discussion in these pages. It must suffice to. insist that the names of foods and dishes which Avicenna gives bear a different meaning to those same names with which we are familiar. Confusion would only be prevented by giving the names in the original language. Many of the words are Persian ; some of the dishes are Syrian ; others are Indian.
§ 251. Arabian Dishes.— The following notes from Lane and Burton -will serve to show the type of dishes which may be regarded as characteristically Arabian.

" Among the more common dishes are the following : — Lamb or mutton cut into small pieces, and stewed with various vegetables, and sometimes with peaches, apricots, or jujubes, and sugar ; cucumbers or small gourds, or the fruit of the black or white egg-plant, stuffed with rice and minced meat, etc. ; vine-leaves or pieces of lettuce-leaf or cabbage-leaf, enclosing a similar composition ; small morsels of lamb or mutton roasted on skewers, called kabab. (796). Fowls simply roasted or boiled, or boned, and stuffed with raisins, pistachio 'nuts, crumbled bread, and parsley ; and various kinds of pastry and other sweets.

" The repast is frequently commenced with soup, and is generally ended with boiled rice, mixed with a little butter, and seasoned with salt and pepper ; or, after this, is served a water-melon or other fruit, or a bowl of a sweet drink composed of water with raisins, and. sometimes. other kinds of fruit, boiled in it, and then sugar, and with a little rose-water added to it when cool. The meat, having generally little fat, is cooked with clarified butter, and is so thoroughly done that it is easily divided with the fingers. A whole lamb, stuffed in the same manner as the fowls above mentioned, is not a very uncommon dish. (Lane, 159 Nights, i. 171.)

"They brought him . . . dishes'" of poultry besides other birds and brewises, fritters and cooling marinades." (Night 415, Burton). . . . " a mess of cooked pomegranate seed." (Night, 712. }
" A very common kind of pastry is a pancake, which is made very thin (662), and folded over several times like a napkin ; it is saturated with butter, and generally sweetened with honey or sugar ; as is also another kind which somewhat resembles vermicelli." (Lane.)

'Adaslyah : soup of yellow lentils, made by boiling them in water till nearly dissolved, and then adding vinegar, coriander, and salt.

Faturat: junket : a light food for early breakfast, of which the Fatlrah-cake was a favourite item. (Burton, vi. 160.)

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Fruits.— Almond, almond-apricot, apple, apricot, banana, bergamot pear, bitter orange blood-orange, cherry, citron, date, fig, grape, hazelnut, jujube, lemon, lime, lote mulberry, olive 8 peach/plum, pomegranate, quince, ^d°ck, su^^ie, sweet-orange, sycamore-fig, walnut, - water-melon. (Lane, i. 301, Burton, v.

28l ~ 28 Hisrimtyah.-A broth of kid's flesh, lamb, and fowl seasoned with hisrim, the iuice expressed from the grape while unripe.

Tamar- palm-pith eaten with sugar (Burton, v. 284).

KuZ 'af-^FdC " Cake" ; bun. A special sweet cake eaten with dates and sherbets. (Burton, iv. 394.)

I Sir verrnicelli cake ; a favourite dish of wheaten flour worked somewhat finer than our vermicelli, fried with samn ■ (butter melted and clarified) and Twettened wrth honey or sugar. It may be sweetened with bees' honey N lg ht 989) m preference to the frequently used various syrups. (Burton, vi. 150.)

IS.-Ac e id P minSd (7 fl 9 eimeat, dressed with vinegar and honey or with „HH svriiTi Raisins a few figs and chiches were sometimes added (i^ane, 1. 435.)

Ti* -A cake or bun, the size of the palm of the hand with two long cuts and sundry obhque crosscuts, made of leavened dough, glazed with egg and dSfiedbTtter and flavoured with spices (cinnamon, curcuma, artesmisia, prunus Salat and'sundry aromatic seeds-specified by Lane as aniseed, mgella, absinthium (Artemisia arborescens) and camphor, etc. (rxignts, v. 509.)

YT£r-St7w See Implicated broth prepared from rice and meat. (Burton,

1V ' ^zlrdak —A rice dish. Rice dressed with honey and saffron (ib. p. 385).
Zirbaj.—A sour meat dish similar to sikbaj (above).

§ 252. The following scheme serves to distinguish differences often overlooked in the popular dictionary definitions :—

Word.

Definition.

1 Aliment - - - Palatable food-material. Raw foods often in their

1. Aiimenx na tural state (Diet, syn : tood, nourishment)

= 15 + non-nutrient, 22 6 and c.

2 Article of food - - The ingredients of a " dish." They are sometimes

2. Article 01 iooq ^ sometimes prepared or manufactured. Any

" foods " obtainable at the various shops.

3. Beverage - - - Any agreeable liquor for drinking (Diet.)
4 Diet - - - - («) 2 ; (b) exact order and No. of 8.

c' Diet-drink - - A medicated liquor (Diet.)

6 Dietarv - - - A course of diet ; allowance of provisionsI(Dict.)

A list of 2.
7. Dietetics - - - A science dealing with 4, 2, etc

Rules for regulating diet (Diet.)
R Dishes - - The product of a recipe as served on the table, whether

8 - DlShSS " cooked or raw (e.g., salad dish, etc.), 2, 4.

/-General terms for anything not immediately harmful.
9. Drinkables - ' Not necessarily harmless after leaving the stomach.

10. Eatables - I Not necessarily nutritious.

•H Food . - - A general term for anything which *' being digested

U - F °° d nourishes the body" (Diet). Syn. for literary

style ; food-material ; aliment ; nutrient ;
provisions — but only so applicable loosely.

12. Food-stuffs - - (a) 9, 2 (6) 1 it . „

13. Food-material - - Scholast. : a special ex of materia „

14. Meal - - - - A course or series of dishes— taken at one ume.

1^ Nutrient - - - The actual nutritive substances of which 9, 10, 11, 21

15. Autrienr. ^ ^^ p otential nutr i m ent.

Nutriment - - - The nutritive subs, which enter the blood (i.e., sep. ott

by digestion in stomach).;

16

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17. Nutritive substance - The chem. subs, known to biochemistry-

Proteins, CHO, fats, salts as general groups-

18. Potables - - . Same^sT^ 3 ' glUC ° S6 ' ^ ™ ^^ SubS " '

19. Ptisan - - - A special form of beverage, medicinal.

20. Provisions - - Roughly, 2, 3 ; more exactly, 2 as found in certain

a P Sl
oo w Ct ? alS ' ^ " " " Same as 17 ' i- e -' certain special forms of 2
22. Waste matters - - («) Eifete matters if after metabolism; ' (6) Non-
nutrient substances of 1, 2, 10, .&c. ; (c) entirely
indigestible; .-. never absorbed.

§ 253 Some of the preceding may be grouped as follows :—
2 =n (12) + n' (12') or n (13).

12 chemically contains aminoacids, carbohydrates, hydro-
carbons, salts, and metaphysically the four '"'elements "
2 are taken (a) raw (milk, eggs, salads, fruits) ;

(b) prepared in some way (i.) dairy products,
.: confectionery, bakery ; (ii.) groceries,

spices, condiments ; (iii.) flesh food ;
fish; fowl; (iv.) vegetables ; pot-herbs;
(v.) special dishes = 8.
8 contribute to make 14.
After the meal has been taken, the food material becomes
(a) nutriment— nutritious to a varying degree ; (b) effete substances,
or wastes.

After circulating these are classified as (a) true nutrients;
[p) excrementitious substances (products of metabolism which are
no longer of use to any tissue).

9. On Sleep and the Waking State.

815. The causes of natural sleep and of lethargy, and
their opposite states— the waking state, and insomnia;* their
effects ; the remedial measures applicable when they are baneful ;
the significance of each ; and all other points about them— all
these have been dealt with in brief in the appropriate place
(336-340). The special treatment will be discussed later.

816. Physiological effects of sleep. At the present, we may

say that sleep in moderation (i) assists the vegetative faculties in their functions, and (2) brings the sensitive faculties into repose and in so doing (3) renews and restores them, and thereby (4) arrests the dissipation of the breath (the vital power). Hence (1) the digestion of the food in the several stages we have named is accomplished. Sleep also (3) remedies the weakness due to the dispersal of the breath (vital power) in various ways; namely,

of h^5 e » Pl m^? ° aUSe(l b I j °T-~" Nor did slum ber visit him for the excess of his joy. —(Night 779 ; Burton.)

2E •

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by bodily fatigue, by coitus, by anger or violent emotional disturbance, and the rest. > _

Furthermore, a moderated amount of sleep brings about an equilibrium in regard to quantity and quality of the humours, and therefore it has a humectant and warming action, which is specially advantageous for the aged, who need their moisture preserving and renewing. That is why Galen said " every night I partake of a little packet of herbs — lettuce combined with aromatics ;, the former because they induce sleep, the latter because they rectify the coldness of the lettuce." And he said, " I am now careful to obtain sleep because I am an old man, and the humidity which sleep brings is beneficial to me."

817. This then is the way to obtain sleep. And if a bath be taken after the digestion of the meal has been completed, and plenty of hot water is poured over the head, this will be an additional help. A still more efficient method will be mentioned under medicaments.

818. Conditions to observe regarding sleep. Healthy persons should pay attention to the subject of sleep : it must be moderate, properly timed, and excess must be avoided. And on the other hand they must avoid the injury resulting to mental and all other faculties from remaining awake too long.

However a person is often driven to keep awake, and refrain from sleep owing to a dread of syncope and loss of strength.

The best 1 sleep is that which is deep ; and that which occurs after the food has passed on from the upper part of the intestine, and after the flatulences and eructations which may have followed have subsided ; for to sleep on this is detrimental in many ways, though the person himself may not know of it ; it keeps him turning from side to side in his sleep ; it hinders digestion ; and it does injury. For this reason, if the passage of the food out of the stomach is delayed, he should take a walk for a little while, and then retire to sleep.

It is also bad to go to sleep on an empty stomach, as this is weakening. It is bad to go to sleep after repletion, before the food has left the stomach, because sleep cannot be deep under such circumstances, and the sleeper will keep turning from one side to the other all the time. For when the natural faculties are busy with the work of digestion at a time when it is accustomed

to be asleep, the fact of being prevented from waking up is disturbing to the natural faculties ; so they become dulled and the process of digestion is disorganized.

It is also bad to go to sleep during the day, for in this case

illnesses depending on humidity and catarrhal states are brought about ; the colour of health passes off, the spleen becomes heavy, the nerves lose their tone ; lack of vim and a poor appetite are noticed, and inflammatory conditions and fevers often appear.

Among the reasons for the injurious effects are : liability to sudden interruption of the sleep, whereby the natural faculties become dulled.

Among the good qualities of sleeping by night are that it should be continuous and deep. If a person is accustomed to sleep during the day, he should not suddenly discard this custom, but do so gradually.

Burton 10 ' explains the following : Aylulah, or " beauty-sleep " : slumbering after morning prayers, causing heaviness and idleness. Ghaylulah : dozing about 9 a.m., which leads to poverty and wretchedness. Kaylulah, or " forty-winks," about noon ; 'the mid-day siesta praised by the Prophet. Qaylulah : sleeping before evening prayers. Faylulah : slumbering after sunset. The last two were held to be highly detrimental (i. 461, footnote).

819. Posture in sleep. The best way to sleep is to begin on the right side, and then turn round to the left. If one begins by lying face downwards, it greatly helps the food to digest, for by this posture the innate heat is conserved and magnified.

It is a bad practice to sleep on the back. It courts the development of grave maladies like apoplexy, paralysis, and nightmare, because the effete matters then tend to accumulate in the tissues of the back, where they are held and prevented from entering the natural channels — which are in front, like the nostrils and palate. Persons who are accustomed to sleep on their backs often become debilitated, for their muscles and members become weakened ; also because one side cannot alternate with the other, seeing that such persons quickly return to the supine position, the back being more powerful than the sides. The consequence is that such persons sleep with their mouth open, for the muscles which keep the jaws closed are too weak to maintain them in that position.

A special chapter is given on this subject in the Special Part.

10. On Certain Matters left over to a Later Place.

820. We leave over till later the discussion of coitus and its constitution, and the measures to be taken to correct errors in this function, though strictly they belong to this place. It is reserved to the Special Part.

At this point also, one would discuss the agents for pro-curing evacuation of the bowel, and how to deal with any

antagonistic influences towards them. We reserve this subject

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to the section dealing with treatment and the chapter on purgatives. However, we. may say here that a person who wishes to maintain his health should procure evacuations by the bowel, the urine, the sweat, and the sputum.

We shall also explain how one may assist and regulate the menstrual flow of women, in order that you may become familiar with this.

ii. How the Members may be Strengthened. How Weak

Persons may be Made Stronger. How to Gain Flesh,

and Increase the Size of the Body.

821. Members (limbs) which are weakly and undersized may be strengthened and caused to grow and develop during the period of growth, up to the final limit for growth, by the use of a suitable degree of massage and of a suitable form of exercise, steadily persisted in. Also by the use of pitch plaster (see 871) An exercise consisting of holding the breath [according to proper rules] is also effective, especially for the respiratory organs (thorax, lungs).

For instance, let us suppose the legs to be underdeveloped ; the person takes a short running exercise ; then a certain amount of massage is given ; then a plaster of pitch is applied. Next day the running exercise is prolonged a little, but the amount of massage remains the same as on the first day. On the third day, the massage given is to the same extent as before, but the exercise is still further lengthened, taking care to stop short of distension of the vessels, for this would show matters are lodging in them which might be antecedent to some inflammatory process or repletion specifically met with in them : varices, and elephantiasis being an instance of such. Therefore, should there be any suspicion of anything of that nature, shorten the exercise to the original degree, reduce the massage ; enjoin rest in the recumbent position ; raise the affected member. Thus, if the persons have a wasted (lit. dried up) leg, raise it by the foot, and apply massage from its distal towards its proximal end.

To car?y this method out for parts related to the organs of respiration— the thorax, for example— we proceed to apply a bandage to the lower parts, making it moderately tight, and of uniform breadth. Then we instruct the patient to exercise his arms, and to breathe as deeply as possible, uttering a loud sound the while,* light massage being applied as well.

* This may be assumed to be a singing exercise, a sustained note being produced for as long as possible at each, breath.

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This subject will be fully discussed in the Special Part

on Beauty Culture, if Allah will.

12. On the Lassitude following Exercise.

822. There are three kinds of lassitude, and we may add a fourth. There are two modes. The three varieties are : the_ Ulcerose, the Tensive, and the Inflammative. The fourth variety which we add is the Desiccative or Arefactive.

823. Ulcerose lassitude. This is a form in which the subject experiences the sensation of ulcers upon the body or in the depths of the skin._ The deeper the sensation the greater is the lassitude. The sensation may be evoked by contact with the skin ; or it may be evoked by movement. Sometimes it gives rise to the sensation of pricking with needles, with a dread of movement, and the subject lies extended because of the- weakness of his shoulders and arm-pits. If the degree of lassitude is still greater, there is a goose-skin. When it is still greater, tremors and fever appear.

The cause of this kind of lassitude consists in an abundance of tenuous and pungent effete matters, a liquefaction of the flesh and fat in consequence of the over-vigorous exercise, and, lastly, the presence of depraved humours in the vessels, which results in changes in the blood, whereby it loses its healthy character ; these abnormal products pass into the skin and affect it. This form of lassitude is the lesser evil which such substances produce. If they should become mobile, goose-skin will result. If they move about still more actively, tremors result. Sometimes the pungent humours detach themselves from the others, leaving the " crude " humours in the vessels. Sometimes the " crude " humours are situated in the flesh.

824. Tensive lassitude. A person in a state of tensive lassitude has the sensation of the body being broken, of heat, of tension or being in a stretched condition, and has a dread of moving himself or straightening his back from the bent position. This is specially the case when the condition follows physical labour. [Cf. the pain of severe lumbago and myalgia.] This condition arises from the retention of waste matters in the muscles which are otherwise in themselves normal ; it is not due to acridity or gaseous matters in them. The fibres are separated from one another, and there is a state of lightness or heaviness. This is often the result of want of sleep. When not associated with want of sleep, the case is different and more serious. Here the muscle fibres are stretched lengthways.

825. Inflammative lassitude. Here the body is hotter than usual. The part is as if distended, being swollen, and of corresponding colour. 1 Distress is felt when the part is touched, or when he tries to move, for this brings out the tension or stretching [which is like the sensation in an inflamed or bruised tissue :.. Aeg.]. The deep-seated pain is called ostalgia. The cause is abundance of waste matters in the muscles.

826. Desiccative lassitude. This is a state wherein one feels a sensation of being dried up in an unusual degree. It follows

(a) undue exercise, the chyme being normal ; (b) twisting the body back sharply ; (c) sometimes it is owing to dryness or atmosphere ; (d) deficient nutrition ; (e) fasting too much. [There is great disinclination for any movement : Aeg.j

827. ' The two modes of lassitude, {a) That following exercise. This is less serious. It is rectified by suitable measures

(b) Spontaneous. This is a forerunner of illness. Special measures must be used for its cure.

These two forms or modes may be combined, the matters which give rise to each being present together, both those which arise spontaneously, and those which result from exercise.

828. Regimen. The regimen for the simple form is known to you. That for the compound form entails the following rules : In the first place pay most attention to avoid the danger of the condition by dealing with the underlying cause. There may be three sources of danger: severity, the nobility (of the organ), and the substance involved. If two, or three are concurrent, the condition is more serious unless the one of them which outstays the other is more potent and therefore overrules them. For instance, inflammative lassitude is more severe, and the ulcerose form is nobler ; but if the substance underlying the ulcerose is far from equilibrium and from the natural course, it forms a restraining influence over the two modes of the inflammative lassitude, in virtue of this nobility and strength, and takes precedence over it. But if the relation be not so very remote, the inflammative lassitude would take the precedence.

13. Stretching and Yawning

829. Stretching comes on when effete substances have accumulated in the muscles. For this reason the desire to stretch oneself is often experienced after sleep.

If these humours become superabundant they give rise to goose-flesh and trembling and shivering. If they increase to a still greater degree, fever develops.

Yawning is really a form of stretching, when this takes place in the muscles of the jaws, lips and chest. Should it arise without any apparent reason in ' a person seemingly healthy, and not at an appropriate time, and to an unusual degree, it is bad. In such a case, it is best when it comes on at the end of digestion, because then it is due to the effete substances being expelled. ■ -

Stretching and yawning may be due to external cold, to thickening of texture of the skin (see 839, ii), whereby exit of certain humours becomes restricted ; to being awakened from sleep before it has finished ; to postponing the evacuations.

Moderately diluted wine is good for this condition, provided there is no contra-indication.

14. On the Treatment of Lassitude following Exercise
(The First Mode of Lassitude)

830. We may say that the chief object to be attained in treating lassitude is to prevent it from being followed by many diseases, including fevers.

Ulcerose lassitude is dealt with by reducing the amount of exercise if that be the cause. If at the same time there is an over-abundance of humours, they need to be expelled. If there be a transient sensation of nausea and satiety, these effects are counteracted by fasting, evacuation through the bowels, and dispersal of the humours in the subcutaneous tissues* by the use of plenty of light massage, carried out with oil devoid of astringency. Exercise is then resumed. On the first day the nourishment should consist of the usual quality of foods, in lessened amount. On the second day the diet should consist of humectants. If the vessels be patent, and there be " crude " serous humour in the mesentery, friction may help to " mature " it, especially if one could bring the virtue of calefacient medicines (digestives) to bear on it. Very good (calefacients) are : willow oil, ol. anethi ; oil of chamomile ; and the like. A decoction of beet-roots in oil, prepared in a double-vessel ; ointment of mallow-roots ; oil of the roots of cucumber asininus and of bryony ; oil of sweet-scented moss ; and any oil in which the

* Of the total humours of the body a certain proportion reaches the subcutaneous tissues, and may become stagnant in that situation. They require dispersal, and the agents used for such purpose are called " discutients." Possibly some of these agents were what are now called diaphoretics. But it must be remembered that the. theory supposes the existence of matters which are discharged either in fluid or in gaseous form, the exit being by different " pores " in each case. -

latter (moss) has been incorporated. [Galen recommends discutients and restorative exercise.]

831. Tensive lassitude. The object in view in treating this is to relax the indurated tissues by means of a _ little _ gentle massage with oil heated in the sun ; tepid baths in which the patient stays a considerable time ; or, better, to take the bath once or twice a day, followed each time by an inunction ; _ complete rest. If it becomes necessary to procure an abstersion of the vessels, or if the oil of the inunction has become dried up, repeat the inunction and administer moist foods in only small amount. It is more important that the amount should be small in this case than in that of ulcerose lassitude. Exercise is sufficient to disperse this kind of lassitude, and cleanse out [the substances which cause it].

If tensive lassitude have arisen simply by the presence of gross superfluities, these must be evacuated. If it has arisen from flatulencies, it is dispersed by the use of such as cummin, caraway, anise.

832. Inflammatory lassitude. There are three aims m treatment of this condition : to relax the tense parts, to cool the heated parts, and to remove the superfluities. These are achieved by the use of plenty of tepid oil, by vigorous light mas-

sage, by a prolonged stay in a bath of tepid water (on the warm side), and by sufficient repose [and by repeated inunction: Aeg.].

833, Aref active lassitude. First day : the normal regimen for maintaining health is to be continued, save that the bath-water should be hotter, because very hot water has a contracting effect upon the skin. This action is not as detrimental as that of cold water, for in this case there is a risk of the cold penetrating into the body, already dry. The cause of the wasting (wrinkling, shrivelling of the skin) may also lie in the fact that the skin is usually relaxed (see 818).

The second day of the restorative treatment consists in the use of gentle restorative exercise of a light character. The bath should be carried out in the same way as on the first day, and the patient should then plunge into cold water, to make the skin shrivel, and to reduce perspiration to a minimum. In this way the skin keeps moist. For water will come in contact with the body as soon as there is sufficient heat in it to counteract the dryness of the skin. And these two factors mutually assist one another in combating the injurious effect of the cold. The injurious effect is greater if the person comes quickly out of the water into which he has plunged.

834. Those affected with lassitude need wholesome food, which must contain little moisture, and should be taken at the end of the first morning hour. Friction may be given on a later occasion, towards evening. The supper must then be taken later still.

The. removal of superfluities from the body must also be procured, using massage with sweet, or willow oil [cf. the modern ol. betulae, or oil of wintergreen]. The abdominal muscles are not touched unless lassitude is present in them. In that case, give light inunction and increase the amount of such food as is not too heating.

835. One should take care that exercise should stop short of producing any sign of lassitude. Then proceed to reversion exercise in-order to draw matters towards the skin by the moderate amount of movement. Having reached the skin, massage _ during the time of resting between the exercises will finally disperse these substances.

836. A person's condition is the guide, as regards bathing. If the bath should induce tremor, the last degree of lassitude has been reached. How much more is this true if fever comes on after the bath ! In such a case the bathing must be stopped, and recourse must be had to evacuation [of various kinds] and the rectification of the temperament.

As long as the water is moderately hot, and the bathing produces none of these adverse symptoms, one knows that it is beneficial to bathe.

837. If there were non-matured, humours in the vessels, the first measure to take would be to apply whatever was suitable for the lassitude, and the next would be to endeavour to make the

crude humours mature and become attenuated, and then to expel them. If they were plentiful, order rest ; forbid exercise. For rest is the great digestive. Avoid bleeding because by this means both pure and crude matters are expelled.

It_ is injurious to procure purgation before maturation. There is no harm in inducing diuresis. But avoid drugs which are very heating, for otherwise the crude humour would be caused to diffuse throughout the body, and facilitate its action.

838. Diet : include pepper, capers, ginger, vinegar of capers, vinegar of garlic, vinegar of spurge, and dried dates, and the well-known confections (i.e. of quince, apples, prunes, etc.), according to measure.

The appearance of a sediment in the urine informs us that maturation has occurred. One may now order wine to complete

the maturation and to procure diuresis. The wine must be delicate and clear, and must not excite vomiting.

15. On other States which may Follow upon Exercise

839 We may first speak about the states, and then pass

on to the subject of the regimen applicable for lassitude of

autogenous origin.

([) Rarefaction of the skin (turgescence, tumescence, relaxation, flaccidity, the opposite of (ii). Very often this is the result of insufficient massage, and of bathing. The treatment consists in dry friction, tending slightly to rough friction, using an astringent oil for the purpose. _ _

(ii) Thickening of the skin (induration, constriction, tightness, tenseness, shrivelling, sclerosis, corrugation ; see 829). This may be the result of (a) cold, (*) an astringent bath, (c) overabundance of effete matters, (d) thickening— and aggregation— of coarse particles of effete matters, (*) change m the effete matters Tor immatured humours] in the direction of viscidity in consequence of which' they cannot pass through the pores of the skin, and so block them ; (/) exercise, for this draws the humours out from the deeper (or remote) tissues if no other cause for this has previously been in operation ; (g) residence in a dusty place ; (h) the use of rough and vigorous friction

When it is due to cold and astringency, the colour of the skin is pale [because it is stretched hard and tight], and the bodily warmth returns only slowly ; sweating is delayed. The skin becomes red again on resuming exercise.— Such cases should be treated thus : the stay in the cold room of the bath must be very short, and the water must not be very cold; then go into very hot water ; turn the patient from side to side, then on to the belly, then on to the back. The slab on which he lies the while must be of medium heat. Do this until perspiration sets in Then anoint with thin [sweet : Aeg.] oils of a hot and resolvent character [oil of dill, of black poplar": Aeg. J.

Cases due to exercise are distinguished by the absence of the above-named sign. The skin is discoloured by sweat and sordities. Such cases are treated by getting rid of such superfluities as may be present, and then carrying out a bath and inunction regimen of resolvent character.

■ Cases due to exposure to fine dust, or due to the use of too much rough friction, are much more in need of the bath than of inunction with oils. Soft friction is to be employed both before and after the bath.

(iii) Rarefaction of the skin may be associated with weakness (asthenia). This may be ,the result of (a) excessive exercise, especially if subsequent massage were insufficient ; (b) over-indulgence in coitus ; (c) too frequently repeated baths. The treatment of such cases therefore consists in the use of restorative exercises, and of dry friction, for which an astringent oil is used in order to obtain a hardening effect. The diet should include humectants in small amount, which are moderately calefacient or moderately infrigidant or slightly inclined to be " hot."

The same sort of treatment is used for asthenia, wakefulness,, sadness, " dryness "in the nerves (or the state which follows on. anger).. In such cases, if the patient finds the digestive process of the food is depraved, the reversion exercises are not good ;. indeed no -exercises are to be recommended.

When the cause of the weakness is an over-indulgence in baths, in eating and drinking, and inactivity, the patient suffers from undue humidity in the tissues (especially the tongue), and the activity of the limbs is impaired. Should this depend on some antecedent cause, the special treatment for that will become necessary.

In the case of any other causes which we have named — wine, undue inactivity, undue moistening effect of the bath — the best thing to do is to anoint the body, use vigorous exercise, employ rough dry friction without oil, or a massage with, the aid of a small amount of a calefacient oil.

When a person experiences undue dryness of the skin of the hands, this belongs to the category of arefactive lassitude. The treatment is the same as for that condition.

16. The Treatment of Lassitude of Spontaneous Origin (The Second Mode of Lassitude)

840. The ulcerose state is recognized when the humour upon which it depends is within or without the vessels. The humour is shown to be within the vessels by (1) the urine being . fetid, (2) the nature of the previous diet : for some articles of diet give rise to an undue proportion of superfluous matters in the blood ; some articles of diet give rise to too few superfluous matters ; or these matters are expelled too speedily ; or medicinal treatment may become necessary for them ; (3) the character of the fluids taken : if wine, whether clear or thick.

From all such data one comes to the conclusion that the. site is within the vessels ; if they are not found, the condition is extravascular.

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841. In cases where the lassitude from superfluities is of extrinsic origin, and the vessels are unobstructed, it is sufficient to carry out reversion '(restorative) exercises, and follow the regimen, to an increased degree, which we have indicated for cases of ulcerose lassitude due to exercise. But if the case belongs to the other group, one should not order exercise, but inactivity, sleep, fasting. Then, towards each evening, the abdomen should be anointed with oil, followed by a bath in moderately hot water, if his condition is such that he will stand the bath.

842. The diet should be of the character already stated : one which makes good chyme, fluid or semi-fluid [lit. able to be sucked, e.g. through a tube or spout], not viscid, and not particularly nutritious. — Examples of such foods are : barley, frumenty, game (provided it is delicate), syrupus acetosus with honey, mead, light white wine. A wine which is matured and diuretic need not be forbidden, but to begin with one would prefer to administer a wine which is slightly sour or rather yellow. Afterwards one changes to a white and light wine.

843. If this regimen proves ineffective it will show_ that the excess of humour present needs evacuation. Should it be the sanguineous humour, do a venesection [or scarify the ankles : Aeg.]. Otherwise, procure purgation, making your choice between them according to the proportion of sanguineous humour which you judge to exist. But take care not to do either if the vitality is low.

844. To ascertain the kind of humour concerned, one considers' the character of the urine and sweat ; and the tendency towards sleep or wakefulness. It is a bad sign if sleep is banished in spite of a good regimen.

845. If one has ascertained that there is a deficiency ot good blood in the body, and that the immature acrid humours are in excess, one must not bleed the patient or purge [or let him bathe (Aeg.)], but procure complete rest. Order attenuant foods and fluids ; avoid any fluid nourishment which is calefacient, but choose such as has a sharp or biting _ or incisive quality : e.g. syrupus acetosus, with honey [acid wines, capers with vinegar and honey : Aeg.]. If it be necessary to increase the power of the attenuants, put a little pepper into the food, and into the barley-water [especially as there is generally hypogastric flatulence : Aeg.]. Cumin and pepper may be needed to counteract the immaturity of the humours (i.e. acrid matters which have not been properly digested) —administering them either before or after a meal, or at bedtime, according as seems best

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to you. The dose- is a small tablespoonful. Pennyroyal is not so good, for it is over-heating.

846 . Now if one is absolutely certain that the immature humours are not in the vessels but in the tissues (lit. roots of the members) one orders massage ; laxative oils, especially in the mornings ; heating drinks — whose heat passes to the skin ; a long rest ; then a -moderately hot bath. Prescribe pennyroyal fearlessly, whilst being sure to give it before meals and exercise.

847. If it be necessary to aid the gastric digestion before a meal, do not give a strongly penetrative remedy like pennyroyal, but choose cumin and pepper in small dose. Quince may also* be used. One could administer more of the latter, if one decides that the extraneous heat of the body would not be much greater in degree by giving it. Beneficial remedies : inunction with oil of chamomile, of aniseed, of sweet marjoram, etc. — whether given alone or combined in wax. Their action is increased by resin, alone or with twice its volume of its oil.

848. When one has ascertained that the immature humout s are in the vessels, and at the same time outside them, one would become more anxious. Do 'not lessen your efforts in consequence. If there be as much within as without, first aim at procuring the maturation of the humour ; pepper may be used for this purpose. To that, if one wishes, one may add parsley, and an equal weight of anise. In this way a greater degree of diuresis will be procured. Or, if one so desire, one may admix with it a little pennyroyal, and at the same time lessen the amount of cumin and pepper. These are lessened step by step until at last there remains" simply nothing but pure pennyroyal. As soon as the (foreign matter) in the vessels has become digested, and has passed on out of them, one has to deal with that which is exterior to them. Pennyroyal will be useful for this purpose, whereas it was impeditive at first. Where the two conditions occur concurrently one must take special care not to attract the impure matter forcibly towards the surface of the body, or to the interior organs either. Hence one should not risk producing emesis too soon, or purging before the humours are rendered'tenuous, and have been " cut " and matured. Exercise is also not ordered.

" The old woman ceased not to . . . ply him with ptisanes and diet-drinks and make him savoury broths till, after the twelvemonth ended, his life returned to him." (Night 325, Burton.)

849. When the lassitude has passed away, and the colour of the skin is more healthy, and the urine normal (" mature "),

plenty of massage -is given and exercise in small amount. One considers whether there is any chance of a relapse, for in that case one would pause in these measures. If it appears that a relapse will not occur, the customary life with regard to bathing, inunction, massage, exercise, is gradually resumed. Finally the strength of the ointments used is brought back to the customary.

If a relapse is threatening, with a sensation like that of ulcerose lassitude, the regimen must be taken up again. If the relapse threatens without that sensation of ulcerose lassitude, the treatment is by reversion-exercise.

If the signs are ambiguous, and the sensation of lassitude is not marked, order rest.

850. The cause of tensive lassitude is : repletion without depravity- of the humour. If the temperament is unhealthy, order venesection and an attenuant regimen. In the type of person of which we speak, the treatment is by attenuants and a certain amount of incisives ; after that one helps the cure by using appropriate agents.

851= Inflammative lassitude. _ Treat by venesection. The choice of vein depends on the part most affected with lassitude, or the part in which the condition began; if it be the head, use the cephalic vein ; if the chest or back, use the basilic vein; if the other members are chiefly affected, or there is no distinction of priority, bleed from the median vein of the arm. It may be necessary to bleed on the second or even the third day. On the first day, one bleeds as soon as the lassitude appears, otherwise the condition may become established. The proper time to bleed on the second or third day is sunset.

852. Diet. On the first day barley water alone, or juice of frumenty as long as there is no fever. If there is fever, give barley water alone. On the second day give a cooling or attempered oil like almond oil. On the third day give a " salad " made with lettuce or cucumber (or, members of the gourd family), or garden mallow [or, " beet " : Aeg.] or sorrel [in cold broth : Aeg.], and give rock fish in white broth (i.e. a special dish or recipe) and forbid drinking [cold : Aeg.] water as much as possible during this day.

If by the third day, the patient feels nausea, or, if he has an appetite but the stomach cannot digest the food, let him have mead, or a light white wine, or an attempered white wine. After the- evacuations, take care not to give a great deal of food all at once, for undigested food will be drawn into the blood. This is due to three factors: (i) when there is not much food, the

stomach greedily holds it, and its retentive power is antagonistic to the attractive power of, the liver. When food is plentiful, the stomach is not greedy of it, and then its expulsive power helps the attractive power of the liver. The same holds good with each receptacle in turn in regard to that which comes next into play ; (ii) when there is much in the stomach, it does not get digested as well ; (iii) the presence of plenty 6f food means that there will be much nutriment for the blood, and the vessels [greedily absorb the chyle before it is digested : (Aeg.) and they] themselves are incapable of digesting it.

17. Concerning the Regimen in the Cases where the Temperament of the Body in Defective

853. i _The temperament (constitution) of the body may be defective either from some deleterious influence, or from the natural course of events beginning from birth. In the former case the temperament was appropriate for a certain length of time, until persistent faulty regimen has produced a change which

itself remains persistent. In the latter case the defective constitution has been present from the outset (of conception).

In the first group of cases, the error is in quantity or in quality, and the nature of the case is revealed by a study of the form of the body [physiognomy in the wide sense ; see also Kuhne 128]. The remedy is to have recourse to the corresponding contrary. . °

The second group of cases shows a depravity of the state of the body, m that there is a change either in the original constitution, or in the course of advancing years of life.

We therefore begin the subject by going into the regimen or old age.

THESIS III

i. General Remarks on the Regimen of Old Age

854. In brief, the regimen appropriate for old people consists in giving those forms of aliment, drink, and baths which render the body warm and moist (i.e. moistening, calefacient food ; warm or hot soft water baths). There should be plenty of sleep, and the time spent on the couch should be llbe ral— - more than is legitimate for adults. The flow of urine should be continually assisted by diluents ; the mucus should be helped out of the stomach by way of the bowels and urine. The nature is too soft, and this needs correcting.

Massage : massage with oil, moderated both in quantity and quality so as to fall short of occasioning lassitude, is beneficial.

Exercise : Walking or horse-riding is taken after the massage. The choice depends -on which is too fatiguing. If both forms of exercise are fatiguing, repeat the massage once or twice

Sleep: the air of the room : some pleasantly redolent aromatic should be used to perfume die air which is breathed, using one which is. moderately " hot."

After sleep, the body should be anointed- with oil in order to stimulate the sensitive faculties. After this the horse-riding or walking exercise may be taken.

2. The Food for Old Persons

855. Food should be given in small amounts at a time. There may be two, or three, meals a day, divided up according to the digestive power, and according to the general condition— whether robust or weakly. In the latter case, at the second or third hour they may partake of well-baked bread, and honey. At the seventh hour after the bath, they may partake of some one or other of the foods we shall name later, which are laxative in action. At bed-time, some laudable nutriment may be allowed.

When they are robust, old persons may have a rather more liberal supper, as long as they avoid any gross aliment which is likely to give rise to atrabilious or serous humour, and avoid all hot, sharp, or desiccative foods, such as dishes made with vinegar,

salt or hot aromatics, seasoning, pickles, etc. These may, however, be allowed as medicaments.

Should some --article of food in the first group have been taken which should have been avoided — such as salted foods, egg-plant, dried salted animal-game-meat, fish with tough flesh' smoked fish — then this must be counteracted with water-melon, and cucumber.

Should one of the other group have been wrongly taken — dishes made with vinegar, salt and strong aromatics (like." fish-jelly," dishes 'with pickles, savouries) the remedy is to use the contraries, and select only attenuant articles if one knows that there are superfluities in the body.

When the bowels have been opened, give humectant foods, followed by -slightly attenuant foods, as we shall explain. [Olive oil may be; given before the meal]

For persons who like and can digest milk, it is beneficial. One knows that it is well-borne if it does not cause fullness over the liver and epigastrium, or itching, or pain. Milk is good for old persons because it is nutritious and humectant. Goats' and asses' milk are best. Asses' milk is recommended because among its properties is this that it is not cheesy, and it passes quickly through the intestines, especially if salt and honey have been added to it. However, one must be sure that the pasturage is free of pungent herbs, or sharp or bitter herbage and marsh-mallows, or very salty herbs.

856, Potherbs and fruits specially suitable for old persons : beets, celery [which is good for persons with a gouty tendency or tendency to calculus : Aeg.] ; also a little leek, which may be dished up with tasty aromatics to help digestion ; also olive oil [and pickles, olives, damascenes seasoned with salt : Aeg 1 This is specially chosen to take before the meal, in order to obtain a laxative effect. It is also an advantage to partake of such at bedtime, for they dispose one to sleep.

Ginger, which is really a medicine, is a good condiment for old persons. And there are various other medicines which may be taken as heating confections made with liquid extracts, taking them in sufficient amount to be warming without causing indigestion or being desiccative. It is essential that the nutrients should be humectant, without any likelihood of exerting a drying effect, and that they should be calefacient and help digestion.

857. Among the foods which may be enjoyed are such as are laxative, and congenial to the elderly body— namely, game-birds boiled with water and salt and flavoured nicely with

condiments, and served with oil ; polypody root, which has been placed in chicken-broth or beet-broth, or in cabbage broth.

Articles of food 1 which have a laxative action, appropriate for elderly persons.— For summer : figs and prunes ; for winter : dried figs cooked in water and in honey. They must be taken before food, to have the laxative effect. [Ripe figs are preferable, unless they cause unpleasant symptoms in the right hypochondrium : Aeg.]

858 If the individual has the peculiarity of being one day loose, and the next bound, solvent food-stuffs may be omitted. If the bowels are loose one day, and bound for two days, it will be sufficient to take such articles of food as cabbage water, and a (Persian) ptisan of barley containing bastard saffron, or turpentine aum, to the amount of one, two or three hazel-nuts. All these have the property of relaxing the bowels, and cleanse the interior organs without harm. Another good medicine is one compounded of the kernel of bastard saffron and twice its amount of dried figs The dose is the size of a nut ; take in a draught.

859 Purgation in elderly persons. Another good remedy is an oil enema, for it empties the bowel as well as lubricates the bowel-walls, especially if sweet oil is used for the purpose. The rectum may simply be lubricated with oil. Strong clysters must be avoided because they dry the intestine. A moist unctu-ous clyster is very beneficial in cases where the bowels have been constipated for several days.

There are also other remedies for procuring gentle motions, and we shall specify these in the formulary.

[Avoid aloetic pills. Strong purges make the constipation worse. Aeg.]

The evacuations in old and decrepit persons must be procured with as little depression as possible, for it is greatly to their advantage to have the bowels opened gently.

If phlegm is engendered in the stomach, remove it by appropriate remedies^

and thel at S once resume the diluent diet, ^^i^! tZ^LlJ (l^f accumulate, remove them by diuresis, and give oil before the meals, (^eg.)

3. Wine for Elderly Persons

880 The wine which is best for elderly persons is old, red, with warming effect, and diuretic. New and white sweet wine should be avoided, unless a bath is taken after a meal at which such wine is taken, and unless there is thirst In that case it is allowable to take white wine which is light without much bodv in it, thus taking the place of plain water.

Elderly persons must shun sweet wines which are likely to prove oppilative [but wines prepared with honey may be allowed even in cases where gout is threatened : Aeg.].

4. The Removal of Obstructions in Old Persons

861. Obstructions are very liable to result from the use of white wine. These may be cleared by the use of pennyroyal, capsicum, and by sprinkling pepper on the wine. Onions and garlic may be taken for the same purpose, if the person is accustomed to take them.

Theriac is also good, especially if the obstruction is recent.

These remedies are to be followed by a bath, by oil, and such aliments as meat-broth with frumenty and barley. Mead is beneficial both when there are actual obstructions or they are merely threatened, and is useful for averting joint-troubles. If there is a sensation of a block in a given member, or if there is a premonition of such, one should combine some diuretic remedy with it, like celery seed.

In cases where the (ureter or) urethra is blocked by a calculus something stronger is advisable, like parsley.

For obstruction in the lung, use hyssop, maidenhair, cassia wood, and the like.

5. Massage for Elderly Persons

862. Massage must be moderate in amount and quality ; feeble or tender parts must not be touched. Between the times of massage, the parts may be rubbed with rough tov/els (binders), or with the bare hands [i.e. without oil], in order to ensure that the members concerned shall not become enfeebled.

6. Exercise in Old Age

863. The factors to consider in regard to exercise in old age are : (1) the different bodily states [of different people] ; (2) the sequelae likely to arise from their ailments ; (3) their previous habits in regard to exercise.

For if towards the end of life the body is still equable it will be right to allow attempered exercises. If one part of the body should not be in a first-rate condition, then that part should not be exercised until the others have been exercised. For instance, if an ailment begin in the patient's head (like vertigo, or epilepsy), or if there is catarrh [nose, throat, etc.], or there is a liability to suffer from the ascent of " vapours " to the head and

brain- — then the exercise should not entail bending the_ head down ; the exercise should be of walking, running, horse-riding, and other exercises involving the lower parts of the body. On the other hand, if the ailment were in the feet, the exercise should employ the upper limbs : for instance, rowing, throwing weights, lifting weights. If the ailment be in the trunk (spleen, liver, stomach, intestines) the extremities should be exercised, supposing there is no contra-indication. If the ailment is in the chest, the lower limbs should be exercised. If the ailment is in the kidneys and bladder, only the upper limbs may be exercised. In these cases the exercises are not to be graduated strictly, as if the members were -to be strengthened. In this

respect the exercising differs from that for other periods of life. In early old age the same principles apply as for ordinary old age./ In other periods of life the weaker members are progressively strengthened by the adoption of exercises for the

purpose.

"The exercise of members is sometimes allowable in the infirm, sometimes not. Thus it is not permissible if the members are " hot " or " dry," or if there are matters (in the body) which might be drawn down into the limbs by the exercises, and fail to undergo resolution in them in consequence.

THESIS IV

The Regimen Appropriate for Cases where the Temperament is Not Normal

i. On the Rectification of Hot Intemperament

864. We may say that in .the case of a hot intemperament (i.e. bilious habit or disposition), either there is an equilibrium wu tW x° P assive q ualiti es, or there is either dryness or moisture When the two passive qualities are balanced, the degree of heat will come to a limit ; it will never be predominant, for that would lead to dryness. If dryness is associated with the heat, the intemperament may be maintained over a long period of time whereas if the heat is associated with moistness, the intemperament will be of short duration because the moisture becomes predominant and obliterates the " heat." However the_ heat sometimes comes to predominate and obliterate the moisture, producing desiccation. Consequently, the condition of a person whose temperament shows a preponderance of moisture will become improved towards the attainment of adult life, and then become equable, whereas later in life the extraneous moisture begins to increase and the bodily heat to diminish.

Therefore we may summarize the principles upon which the management of persons with hot intemperament is to be conducted m these two intentions : (i) to restore equilibrium- (2) to conserve the existing state of health.

To secure the first, a patient needs training during the early years of life, the " passions " being subdued in a willing obedience to orderly discipline during all that time. Unless the discipline is orderly there will be a liability to illness. This intention is also gained the more easily if care be taken that the aliment is appropriate for their particular intemperament because in this way the health recovered is also conserved.

865. Individuals with a hot intemperament who are attempered m respect of the two passive qualities, are nearly normal m health at the commencement of life, so that this kind of intemperament makes the teeth erupt early and the hair grow

quickly ; such children will be ready of speech, clear in utterance, and quick walkers. As they grow older, the hotness becomes dominant,- dryness -increases, and the temperament " biting " [sharp-tempered]. Bilious humour is formed to excess in many of such individuals [as they grow older]. ^

Accordingly, the. regimen during the early years is the same as that of attempered constitutions, and as the temperament changes the regimen must be correspondingly changed, seeking to provoke the urine, and help the choleric humour put of the body either by the bowel, or by emesis [and by the urine]. For if nature (i.e. the action of the bowels) alone does not suffice to get rid of the excess of humour, emesis by mild remedies may help to do so — using such as plenty of warm water, either alone or with wine. The action of the bowels is secured by the use of such things as conserve of violet, confection of tamarinds, manna, and Persian manna.

Exercise should be lightened.

Food : only allow such as yields good chyme.

868. Baths : if these are necessary, they may be taken daily or every third day. But in that case nothing heating should be allowed (in the food). If the bath be taken after a meal, and it does not cause distension or heaviness over the liver or epigastrium, there need be no anxiety. But if such symptoms should arise, an aperient should be given. For instance, infusion of absinthe ; a mixture containing aloes, anise, bitter almond, and oxymel. The bathing after food should also be stopped [and the diet should be light, with deobstruents and viscid articles of food (Galen)]. These aperients are to be given at the end of the first stage of digestion, and before the second stage is completed. But there should be a certain interval of time between the aperient and the next meal — namely the interval between the morning exercise and the time for the bath. Inunction with oils is required, and a light white wine should be given. Cold water has a useful (weakening ; strengthening : marginal reading) influence.

All these suggestions apply specially to those whose temperament has been hot and dry from birth.*

* Galen adds : "If bile passes down plentifully, good ; but if it regurgitates into the stomach, vomiting will become inevitable, and tepid water should be taken. Exercises should be done before meals ; and they must be slow and gentle in character.

Gymnastics are not required by persons of very hot temperament ; walking exercise is enough. The baths may'be taken after a meal in such cases.

If the temperament is hot and dry, the regimen should be diluent (succulent food — bathing — avoid much or strenuous exercise).

During the summer, the bath should be taken early, and repeated after (the main) meal. Cold drinks may be allowed.

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867. Those who have a hot and moist temperament show

a tendency to (abnormal) decompositions in the various matters which also tend to descend into the limbs. Such persons should take exercise of a kind which will favour dispersal (of humours), but is mild enough not to prove over-heating. A degree of activity likely to cause " ebullition " in the humours must be avoided.

A person who is not accustomed to much exercise should eschew it. Exercise should be taken after the bowels have been evacuated. Baths should be taken before the meal. Care should be taken to get rid of all superfluities (quickly).
_ When spring approaches, moderation should be observed m bloodletting and purgation.

2. The Rectification of a Cold Intemperament

888. There are three kinds of cold intemperament. (i) When there is a balance between the two passive (qualities), the intention is to produce more innate heat by means of (a) hot aliments which are moderately moist and dry; {b) calefacient inunctions; (c) large electuaries; {d) evacuation of the corresponding humours; (e) baths likely to induce sweating; (f) exercises contributory to sweating.

(2) At some periods such persons may be attempered in regard to humidity, and yet it sometimes happens that the coldness gives rise to humidities.

(3) In those individuals in which there is dryness as well as the cold intemperament, the regimen should be prescribed as for old age.

Aegineta adds : "the dry kind is the worst, because this is the form characteristic of old age. Warming agents and diluents are needed (namely, moderate exercise ..moist heating food, heating wines, plenty of sleep). The bowels should be emptied daily. Venerv should be avoided.

The moist kind is " bad," because there is a liability to rheumatic affections Here avoid _ bathing, and take light exercise often, and 'make use of moderately calefacient inunctions. y

If the temperament is dry, avoid : tiring exercise, exposure to the sun ■ prolonged wakeful state ; cares ; venery. ' y .
_ If the temperament be humid^ more exercise is necessary, and the digestion in the stomach needs assistance, and also the urinary secretion. Rheumatic and plethoric complaints are liable to occur. The bath should be taken before meals and twice or three times in the day. Aperients and diuretics should be given before food. Masticatories, cathartics, and diuretic wines are allowable.

3. The Regimen for Persons prone to Illness

869. _ When persons are prone to illness, it is because of (1) repletion ; (2) the presence of unmatured humours. In

the former, the quantity requires modification ; in the latter the quality of the humours needs modification.

(i) The quantity of humours is modified by modifying the

amount of food taken ; by increasing the exercise ; by massage before the bath (if the person is accustomed to- exercise and massage ; otherwise these must be mild) ; by dividing the meals so that the food is not all taken at one time, and to satiety. If the skin acts very readily, and the inducing of sweating is customary, this may be procured. If the fact of the -meal being taken slowly does not result in the pouring out of bilious humour into the stomach, the meal may be taken after the bath. But if it should do so, the meal should be taken before the bath. In the former case, the proper time for the meal is after the fourth hour.

But if bilious humour pours into the stomach, the meal is taken before the bath, and further, if there are symptoms of congestion in the liver, those among the above-named aperients which are appropriate to the temperament are administered. Should there also be symptoms pointing to (congestion in) the head, walking about is of assistance. If the food undergoes putrefaction in the stomach, and then passes on, no matter ; but if it do not pass on, one must administer cumin, or figs mixed with bastard saffron seeds. An electuary of this is named [in the Formulary].

4. To Help Lean Persons to put on Flesh

870. The chief cause of emaciation, as we have said, is a dry intemperament, dry mesentery, and dry atmosphere. When the mesentery is dry, it will not absorb nutriment, and this renders the degree of dryness and wasting still greater.

Note that emaciation, leanness, or wasting is here understood as including the condition of a person convalescent after a long illness.

Other causes of lean habit of body : attenuant regimen, attenuant medicines ; mental anxiety in a person of dry temperament.

" I observed a youth wasted with sickness, as he were a worn-out, dned-up waterskin. And as I looked on him, lo ! he repeated these couplets. . . ."■ (Night 410). The sickness here referred to is a frequent event among the lovers m these tales, being the effect of abstaining " from meat and drink, and being estranged from the solace of sleep" (Night 114), an effect proportionate to the mental anxiety arising from the pain of parting. The descriptions are graphic enough, and are equally applicable to cases of wasting from organic disease.

A warm temperament also predisposes to leanness. Fat persons are of cold temperament, and are therefore benefited if made " warm."

87i„ Baths. Before taking the bath, the skin is rubbed with linen cloths to a degree between rough and gentle, until the skin becomes red. The rubbing may then be more vigorous.

After that, a pitch plaster is applied* [for three or four days : Aeg.]. The object of the massage before the application of the pitch plaster is to prevent the puffing of the tissues from subsiding again. _ Exercise is to be moderate. The bath follows at once! The skin is dried with towels. Then massage is given using [emollient (H. A.)] oils. Lastly, a meal of suitable type is given [fat meat, pulse, almonds, bread : Haly Abbas].

It will be seen that in this regimen, the bath is taken on an empty stomach

I Z \^ P n0 ¥ d ^ ^ rUl6S re S ardin g b ^hing state that a person is ma^ftTnner if he takes his bath after a meal, before the food has digested.

If the age, season, and custom allow of it, cold [tepid : Aeg.] water may be douched over the person.

Sleep should be encouraged. (Haly Abbas)

if tw Z°lT al i ^-~ Pale perS °5 S Wh ° are P° orl y ^rished would become stouter if they were aroused to anger, and mental excitement (Aeg)

If only a part of the body is wasted, as for instance after fracture, the vital powers must be stimulated ; moderate friction will encourage the circulation in

redH?nf ^ c W n m W | t6r + 1 t dOUChed ° ver lt in sma11 quantities, until the skin reddens ^d swells Suitable exercises are also carried out. Pitching may be S'^ii th %part feels cold, friction with linen cloths should be done! or some mild calefacient applied, like thapsia made up with honey or wax. (Oribasius).

The above regimen is almost identical with that which we have spoken of for increasing the bulk of an undersized member. The completion of the subject will be found in the fourth book, when discussing beauty culture.

5. How to Reduce Obesity

872. The regimen which will reduce obesity. (1) Procure a rapid descent of the food from the stomach and intestines, in order to prevent completion of absorption by the mesentery. [One may take saltish things of laxative nature : Rhazes.] (2) Take food which is bulky but feebly nutritious. (3) Take the bath before food, often. [Take not food immediately after the bath, and a short sleep ; follow up the bath with massage ; make a long stay in the bath : Haly Abbas.] (4) Hard exercise. (5) Resolvent oils. [Rub in oil containing root of wild cucumber, marshmallows, gentian, all-heal root, birthwort root, poley, and centaury ; volatile ointments ; oil of dill : Aeg.] (6) Electu-aries :_ the lesser myrobalan electuary ; electuary of lacca ; " thenac." (7) Take vinegar, and salt, while fasting.

a ■ a" •'l-? i * chin ,§ /,.', consists in rubbing into the skin a preparation made bv meltin°-dried pitch m a httle oil, and warming it to a consistence suitable. The skin must be shaved first. The plaster is then removed before it has quite set. It is ften warmed again and re-applied. This is repeated several times. (Aetius)

.Bituminous and sulphur baths may be used with advantage (Rhazes)

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The subject is further discussed under the heading of beauty culture.

Other details : (Aeg.) -.—Meals : only one a day. Drinks : take a fragrant draught before a meal. Wines : use thin white wines. Sleep : must not be protracted. Baths: use natural diaphoretic waters; if these are not available, add flower of salt to a sea-water bath ; or add a large quantity of nitre. Sandbaths. Massage : dry rubbing with. thick towels; rub with rough salts, such as nitre.

Medicinal Agents : attenuants, that is, medicines which attenuate the humours ; wild rue seed and tops of macedonian parsley, various strong diuretics, with or without pepper, and with or without asarabacca and anise ; also the other remedies named in brackets above. Winter favours the formation of flesh and blood.

THESIS V

The Changes in the Atmosphere

The Regimen according to the Seasons, and the Variations

of the Atmosphere

873. Spring. At the onset of Spring one has recourse to bleeding. Cathartics are taken according to requirements and custom. Emesis should be induced. [Spring fills the system with humours (Rhazes)]. Diet : avoid very heating and moistening meats and drinks ; use attenuant articles of food. Exercise: in moderation, but in greater amount than is proper in summertime.

Too much food should not be taken at a time ; the meal should be divided over a period. As to drinks, take diuretic syrups and robs. Avoid hot, bitter, salt, or sharp things.

874. Summer. [Summer dissolves the humours and weakens the vitality (Rhazes).] Eat sparingly of foods. Moderate the drinks. Moderate the exercise. Take sufficient rest. Use diuretics plentifully. If emesis is possible, it is 'advisable. One should keep in the shade, under cover. The food should be infrigidant. [Avoid wine and venery (Rhazes).]

875. Autumn ; the season when the weather is changeable and unsettled. [Autumn engenders bad humours, bilious and sanguineous (Rhazes).] A more liberal regimen is here needed, if health is to be preserved. Avoid : desiccant agents ; sexual intercourse ; drinking much cold water ; cold shower baths ; sleeping in a cold place (cold enough to excite gooseflesh) ; retiring to sleep on a full stomach. It is advisable to protect oneself from the midday heat and the early morning cold breezes. Fruits are to be avoided, or at least taken only in small • quantity [they supply bad chyme, and engender flatulencies (even figs and grapes do this) unless taken before food]. In bathing, only tepid water may be used. [Exercise should be moderate.]

During the time of the autumnal equinoxes, evacuations

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should be procured in order to ensure that the excrementitious particles shall not be held back in the system all winter. Although for some persons it is better to see that the humours are kept " on the move," it is usually best they should keep in repose.

As the age advances, emesis must no longer be procured

in autumn lest fever should be encouraged to develop.

Wine must - be well-diluted, and restricted as much as possible.

You may be assured that if the autumn is a wet one, there will be little likelihood of the usual autumnal disorders coming on.

876* Winter. There should be plenty of physical work. Eat liberally, if the prevailing wind is northerly. If southerly, increase the exercise but diminish the amount of food.

Diet-. The bread should be made heavier in winter than in summer;. The same applies to flesh-meat, roasted meat, and the like. Potherbs : take cabbage, beet, celery. Avoid orach, red barley, purslane, endive.

[Aegineta allows acrid potherbs, and states that heating substances like pepper, cummin, mustard, rocket, may be taken liberally. As regards wine, he says more wine may be taken this season, using the strong and heating kinds.]

When the body is healthy, illnesses are unlikely to come on during the winter. Should they do so, however, the appropriate treatment should be used, including purgation if that is necessary. Illness will only arise under strong provocation, the agents being usually of a " hot " quality. The reason is that the innate heat, which is the determining factor, is very strong during the winter, because the cold prevents its dissipation, and collects it among the interior organs. Furthermore all the vegetative faculties are more efficient at this season.

Hippocrates favoured purgation to blood-letting. He was against procuring emesis during winter, though approving of it during summer, on the ground that the humours of the body are now on the move whereas in winter they tend to stagnate. One may use this fact as a pattern.

877. When the atmosphere becomes pestilential in character, the body should be given a desiccant regimen, and the dwelling-house should be constructed so as to be able to be kept cool and dry. When contagious diseases are abroad, the air should be warm, and charged with agents which prevent decom-position of the air. Things which emit pleasing odours are good, especially if they are contrary in temperament to that of the atmosphere.* Besides this, during times of pestilence, one

* " . . . had perfumed the place with musk, and aloes-wood, and ambergris." (Night 733.)

should not allow draughts, but ventilation should be secured slowly, by means of small fans and ventilators.

Very often air is contaminated from the soil. In this case it is well to sit on couches (instead of on the ground) and to seek out dwellings on ground which is as elevated as possible, so that the winds traverse them.

Very' often, too, the air itself is the seat of the beginning of

the decomposition changes — either because it is contaminated by -adjoining impure air, or by some " celestial " agent of a quality at present unknown to man. In that case it is best to retire to underground dwellings, or to houses enclosed in walls on all sides, or to caves.

Fumigations may be used to purify the air : sedge (or, galangale), frankincense, myrtle, rose, sandalwood.

During the time when pestilences, are about, one may use vinegar in both food and drinks, for this preserves one from the danger.

Other details will be discussed in the special part of this work, in order to complete the subject.

THESIS VI

The Symptoms Premonitory of Diseases

878.

Symptom.

Tremor of the heart continuing persistently

Nightmare, and vertigo frequent.

Jerking movements of the whole body.

Ditto, persisting long enough to affect vision and bodily movements. Also plethora.

Loss of sensation in the limbs

Much twitching of the face

Face becomes very red ; tears flow ; vision fails ; headache.

Inexplicable sense of gloom and dread.

Face reddens, swells, and darkens and keeps so.

Body heavy and relaxed ; veins

prominent.

Face, eyelids and limbs slightly

tumid
Great stench from the faeces . .

Offensive urine
Lassitude and loss of spirits . .
Loss of appetite ; undue ap-
petite.

Remedy.

Evacuate the gross humour

Evacuate the serous

humour.
Ditto.

Ditto.

Procure cranial depletion.

Blood-letting purgation, etc.

Evacuate the oxidised
humour.

Bleeding.

Treat the liver.

Treat the putrescence in the

vessels.
Ditto.

Danger.

Sudden death.

Epilepsy ;

apoplexy.

Convulsions ;

apoplexy.
Ditto.

Paralysis.

Trismus.

Insanity ; delirium.

Melancholy.
Lepra.

Rupture of a vessel;
apoplexy ; sud-
den death.

Dropsy.

Fever.

Ditto.
Fever.
Illness (in general).

In short, when any of the functions are abnormal in some way _appetite, defecation, urine, sexual desire, sleep, action of skin, itching, keen mental faculties, violent temper, unusual tastes, nocturnal pollutions— whether the abnormality is an increase or a decrease of function, or of quality or of character, one may be forewarned that some disease is on the point of super-vening. Unusual events have the same significance. For instance, bleeding of piles, menstrual flow, vomiting persisting, nose-bleeding, craving for something, whether bad, or apparently good because in a way natural. For this reason one should not abstain from desired foods or things unless they are entirely bad, and even then, the abstention should take place gradually.

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Some special symptoms denote particular conditions. Thus, persistent severe headache, and dilation of the pupil warn of cataract. The following are also forerunners of the same disease : imagining that there are bodies like insects, etc., in front of the face when one is sitting still and motionless ; great

impairment of vision.

The following are also noteworthy :

Description.

Morbid state corresponding.

Heaviness and stabbing in right side
Heaviness and tightness in sacral region and

lumbar region ; urine abnormal.
Colourless stool
Persistently scalding urine
Burning pain in anus on defecation
Anorexia, vomiting, distension, pain in legs
Pruritus ani, not due to worms . .
Eruption of many boils and pimples

Serpiginous eczema (ringworm) . .
White morphew

Liver disease.
Kidney disease.

Jaundice.

Vesicle or penile ulcers.

Dysentery.

Colic.

Piles.

Internal imposthumes. Rupture

of an abscess.
Leprosy ; black vitiligo ; white.
White vitiligo.

2. General Remarks on the Regimen suitable for

Travellers*

879. A person who is about to make a long journey must accustom himself to do without many things which are available in his own home, and must be prepared for hardships and pains. He must therefore take precautions against many illnesses [including fevers: Rhazes] to which he is exposed, if Allah will. He must be specially careful about diet and to avoid lassitude (a consequence of fatigue).

Persons of humid and phlegmatic temperament are not liable to develop fever from exposure. (Rhazes.)

880. Preliminary Measures, (i) Bodily state. One should not set out upon a journey when in a state of sanguineous or other plethora. A purge should be taken first. [If the journey is likely to be arduous, a bleeding should be done also : Aeg, — The body is rubbed with oil (Haly Abbas).] If there is a sense of nausea, due to indigestion, one should fast, and then sleep till the nausea has passed off, before proceeding on one's journey.

(ii.) Hygiene of body : it should be anointed with oil (ib.)
(iii.) Dress : A binder should be worn. This is at least five cubits in length, and six or seven fmgers'-breadth. This is applied round the loins, and the hollow of the ribs. The head must be covered. Take also a staff, as a help both in descending and ascending hills. (Haly Abbas).

* The matter in- this chapter has been slightly re-arranged.

(iv) Care of tHe eyes (from snow and dust) : Expose them to the. vapours produced by pouring wine on a heated stone, or to those of chamomile, dill, or marjoram, ^azes^ ^ ^^ ^^ ^ ^^ smeared with cale f a cient oils, (ib.)

(vi) Sleeping and Fasting. If it is necessary to travel on without sleeping, the. habit of doing with little sleep should be acquired by preliminary practice. Similarly, if there is a likelihood of long fasts and of long abstinence from fluids, a habituation to this should be made first. One should also accustom oneself to the kinds of foods one is likely to be able to obtain during the journey— foods of high degree of nutritive value, and taken in concentrated form.

Instructions differ according to the season of the year in which the journey is bein- made.-In winter, a purge should be taken before starting. The binder should be longer than above stated. The body is not to be anointed at the stages in the journe|.-In Summer, the body must be covered to protect it from the sun. The binder is to be as stated above. (Aeg.)

881 Exertion. The exertion which a journey entails should be met by making the first day's work very little more arduous than that customary ; and so grade the exertion day

after day. , r ,

882. Diet. The food must be concentrated and ot good substance, and allotted into rations which are not too bulky, so that digestion will be well completed, without leading to the accumulation of effete matters in the blood. Should hunger be very pressing, let the traveller take a snack of a quality appropriate for his temperament, and unlikely to induce thirst. This rule applies whether the journey be by night or by day.

Rhazes suggests chewing pickled onions en route, to assuage hunger. Note

that nfght-tfme fs g pref erred for travelling across deserts, or in hot countries generally.

Potherbs and fruits are to be eschewed, as also any articles likely to engender " crude " humours, unless such articles are required for medicinal purposes.

883 The traveller should not resume riding immediately after a good meal, because the food would then undergo decomposition, and thirst would arise. Then, after quenching the thirst, rumblings and distension of the stomach would supervene, and there would be nausea with satiative indigestion. Therefore, instead of so doing, one should wait till the time for alighting at the hospice, unless there is some special reason for doing otherwise, as presently to be stated. .

884 A person may have to fast so long that the appetite is lost. To aid one in submitting to this, the following are useful: cold foods prepared from roast livers and-the" like, pills

prepared with viscid "or glutinous substances, strong fluid fats, almonds, and almond oil. Certain fats like that of beef will stave off the feeling of hunger for a long time. There is a story of a man having swallowed a pound (12 ozs.) of oil of violets in which fat had been dissolved until the oil was of the consistence of a plaster ; he is said to have been free of desire for food for ten days.

885. Precautions against thirst. One may adopt a similar plan (to the preceding) when one knows one will have to suffer long from thirst. It is therefore advisable to inform oneself of those medicinal drinks which will abolish thirst, and are named in the third Book, in the chapter on "Thirst." A specially good medicine of this kind is furnished by dissolving three drams of purslane seed in vinegar.

Avoid any foods which are likely to evoke thirst. Namely, such as fish, capers, salted foods, sweets.

Converse as little as possible. Make the rate of walking gentle.

If there is a shortage of water, it is a good plan to add vinegar to it, for this allays thirst.

Rhazes gives : " Water with polenta sprinkled on it, and a moderate quantity of salt." Or, hold cool liquid in the mouth ; pour cold water on the hands and feet.

Fatigue ; Lassitude. This must be treated according to the chapter on that subject.

At the end of a journey. — Take a comfortable apartment ; do not go near the fire. Rest. — Do not go to sleep for an hour. After that, the bath may be taken. Massage is then given till the skin is all ruddy. Then the traveller may go to sleep on a soft couch. (Rhazes).

3. Regimen Applicable when Exposed to Great Heat,

ESPECIALLY WHEN TRAVELLING ; ReGIMEN SUITABLE

for Those going to Hot Climates

886. The things to guard against are : asthenia, loss of bodily vigour, muscular weakness ; insatiable thirst ; sunstroke.

Therefore the head [and body : Aeg.] must be protected from the sun. Those who are making journeys must protect the chest, using an application composed of such things as mucilage of fleawort ; purslane juice.

Persons about to journey into very hot regions will need to take something like barley-meal cakes, and fruit syrups, before starting off, for to ride on horseback (or camels) entails an unperceived loss of strength and vitality, if the intestines

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are empty, with' nothing to replace the void. Therefore it is advisable to partake of such things as we have named in small amount, and wait awhile to give them time to pass out of the stomach, and so ensure that there will not be any splashing about of its contents.

•One should use oil of rose and violets on the journey, anointing the back with them from time to time.

The injurious effect of travelling in the heat may be alleviated by having a swim in cold water, but it is best not to plunge in suddenly. One should wait a while and enter the water gradually.

887. If there is a risk of simooms, the nostrils and mouth should be covered, and one should go about in that way. Before being exposed to such a danger, one may eat onions with buttermilk and without butter ; or, better still, onions infused for a night in the milk ; and one may eat onions by themselves as well, and take the buttermilk after them. Before steeping the onions into the buttermilk, deep incisions should be made into

them.

Another remedy is to make use of some fragrant substance like rose oil, and the oil of gourd-seeds. The latter may be sucked (as a lozenge) because it mitigates the ill-effects one fears.

888, If the sun-stroke has already occurred, let cold water be thrown over the limbs, and lave the face with it. Pour cooling oil like rose oil over the head, and also willow-oil, and cold

' juices like that of houseleek. Then lave. Sexual intercourse must be avoided. The rations should consist of cold pot-herbs. Salted fish is also appropriate, the person resting the while. Diluted wine is advantageous. If there is no fever, milk is the best food of all. But if there is fever (not of a putrid type, but of a one-day type), sour buttermilk should _ be given. If there is thirst after sunstroke, rinse the mouth with cold water. Water should not be swallowed to repletion, because of the risk

of sudden death [from shock] thereby. The rinsing of the mouth should be done with moderation. If, however, there is an excessive craving for fluids, allow the patient to sip a little at intervals. Such thirst being due to the previous exertions, let him rest, and then drink. But it would be better to take rose oil with the first portion of water, and take the ordinary water after that.

In brief, when exposed to heat stay in a cool place ; lave the feet and hands with cool water. If thirsty drink cold water by sips. The food should be such as is readily digestible.

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4- The Regimen for those Travelling in or to Cold Climates and Icy Countries

889. I consider that it is a very fearsome thine to travel in the intense cold, even if one takes great care and protects oneself by every possible precaution. So how much the more is it fearsome if the person has made no preparations at all ?

How many travellers have taken every possible precaution and have yet died from the exposure to cold, and the cold winds worse becausethere is no rain— dying in convulsions, or tetanus' or were frozen to death ; or died with apoplexy, or died in the manner of persons who have been poisoned with opium or mandragore ? r

And even if the condition to which they are reduced is not fatal, they .often experience the pangs of hunger, as what is called bulimia— the treatment for which is described already in the proper place, along with that for other disorders of the same class. I he best thing to do is to plug the nostrils and other apertures, and protect the mouth so that the cold air does not enter at once {into the lungs). The exposed parts must be protected in the way we shall describe [in 894].

890. When the traveller in bitterly cold places has reached his haltmg-pkce, he should not approach a very hot fire at once, but gradually by degrees, beginning with a slight warmth, and slowly going nearer to the fire, though it would be better not to do that at all. However, even though the need of warmth is very great indeed, the approach must be still made gradual. I he traveller may push on quickly if he so wish, if the exposure to cold is not affecting him adversely, or depriving him of energy, r &

891. Frostbite. A person who has become frostbitten must be attended to without delay ; he must be warmed and the vitality restored by calefacient oils, especially those which possess the properties of theriac, like oil of lilies.

When the traveller has reached an inn, and is an hungered let him partake of something warm ; he will get wonderfully warm, with fever-like heat.

892. Provisions to take. Certain kinds of provisions would enable the traveller to endure the exposure to cold more easily. Ihus, any prepared foods containing plenty of garlic, nuts

mustard : asafoetida. " Lactic " cheese made up with barley (meal a special recipe) may be added in order to impart a pleasing taste to the garlic and nuts. [Pickled onions may be chewed (Rhazes).J Butter is also a good thing to take, especially if wine

be drunk afterwards. Wine should be taken instead of water. One should take rest until the wine has come to rest within the body, and gives the sense of warmth* He may then mount and continue his journey. No one should go out into the (bitter) cold on an empty stomach ; he should have taken plenty of

nutriment. .

Asafoetida is among the things which have a warming effect, when one is frozen with cold ; especially if wine is given at the same. time. The initial dose is one drachm (12=1 oz.) of asafoetida to 1 lb. weight of wine. _

893. The body may be protected from injury by the external cold by the use of epithemes, made with oil (pitch or tar). [The loins, spine, and chest may be bound with a long swathe,. to protect them (Aeg.).]

Garlic (as an epitheme, 894) is among the things useful for those exposed to a cold atmosphere.

Care of the eyes and feet. (See 880.)

e. On Protecting the Limbs from the Injurious Effects

of Cold. Frostbite

894. The limbs should first be rubbed until they grow warm Then use a warm liniment compounded with pleasantly smelling oils like that of lilies, and oil of myrobalan (benzoin) Syrup of lily flowers combined with aromatics. if this is not to hand, take oil, especially oil into which pepper, or pyrethrum, or euphorbium, or asafoetida, or castoreum have

been placed. , -,. , ^ ^ ^ _

Epithemes may be applied to the limbs to protect them

from the cold, using galbanum, garlic, aided by pix liquida,

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The foot-wear must not be so tight as to compress the feet, for freedom of movement is the best means of protection from cold, whereas restriction of movement interferes with (the circulation) and makes the limb cold. It is also a good plan to cover the feet with' parchment, and wear fur over that.

If the hands or feet are not aware of the surrounding cold, so that one does not take the proper precautions against it, it is a sign that the sensation is already being lost, and the frost is already exerting its harmful action upon it. In such a case there must be no hesitation in action. For you know that once

the (freezing) cold penetrates into a member, not only is the innate heat extinguished, but the very substance on which that

* Rhazes advises hot wine as a drink before setting out.

heat depends is destroyed (dissolved, tahallul). The tissues are then at the mercy of putrefaction. So there is an urgent need for all those measures which have been discussed in the chapter on ulcers, especially the grave eroding ulcers. If the degree of action is still short of the stage of putrefaction, the best thing is to place the limbs in snow water, or into water in which figs have been boiled, or cabbage, or myrtle (i.e., odoriferous things), or into dill water, or chamomile water. All these are beneficial. A good local application is made with pennyroyal. Wormwood of Pontus, and betony, and turnip are also good medicaments for the purpose.

One must avoid exposure to direct heat.
It is also necessary to walk about quickly, moving the feet and limbs, doing exercises with these, and also applying friction, and inunction. Warm water may be poured over the part from a height, along with the other aforesaid measures.

895. It is important to realize that to allow the limbs to be still and motionless in the cold air, without exercising them m any way, is the surest way to subject them completely to the intense cold. Some people, however, actually make use of cold water for the purpose of overcoming frostbite, taking away the ill-effects of the cold just as is done with frozen fruits. For the plunging into cold water has the effect of drawing out the ice, and of washing it away, and melting the tissues and restoring them to a normal temperature, whereas exposure to heat would simply lead to decomposition. However it be done is no particular concern of the doctor.

_ 896. If the extremity begins to become dark in colour, an incision should be made into it, to let the blood out of it ; the limb is then placed into warm water to prevent the blood from congealing and so failing to run out of the tissues. The flow is allowed to continue till it stops of its own accord. After that an epitheme is applied, using Armenian bole and vinegar blended together, for this antagonizes the injury done. Pix liquida is also a good adjuvant to this both at the commencement and at the conclusion.

When the darkness goes on to blackness or greenness, showing that the mortification is increasing, no time must be lost -in stopping the process, for otherwise the healthy parts adjoining will become implicated and undergo putrefactive changes which will surely spread on into the interior organs. The measures to adopt under these circumstances are described in the appropriate chapter.

6. How to Preserve the Complexion while Travelling

897. The face should be treated by applying epithemes

to it, which are prepared with viscid substances, such as mucilage of fl'eabane, mucilage of purslane, gum tragacanth in water, gum arabic in water, white of egg, and such things as rusks of the finest wheaten flour dissolved in water, Chritan lozenges.

When the face is exposed to biting winds, or cold or the action of (intense) sun, the measures to be adopted are those given in the section on " Beauty Culture."

Scented face powders of the East are referred to by Burton^", who specifies one composed of rice-flour or powdered bark of the mango, deodar (uvana longifoha), sandal-wood, lign-aloes, or curcuma (zerumbat or zedoana) with rose-flowers, camphor, civet and anise-seed (v. 257).

7. How to Counteract the Injurious Effects of the

Various Waters, while on a Journey

898. The traveller is more exposed to illness from the diversity °of the drinking water than he is from the diversity of foods. Hence it is necessary to be particular about correcting the bad qualities of the drinking water, and expend every effort in purifying it.

1 . Procure the rapid passage of water through the body

by inducing sweating.

2. Boil the water, for as we have already pointed out, boiling sometimes clarifies the water and separates off the impurities which are admixed with the intrinsic substance of the

water. .

3. The best measure is to distil the water. Ihis may be done by making a wick out of twisted wool, one end of which is placed in the full vessel and the other into an empty vessel. Water will then escape from the one to the other drop by drop. This is a good way of clarifying water when it is necessary to do so frequently.

Note this original use of the word " distil " ; the water passes from one vessel to the other steadily drop by drop. When heat came to be used, the water being placed in an alembic, or nowadays, in a " retort or still (a metal retort), the water also comes over drop by drop. The coming of the water drop by drop gives the name to the process of distilling. Poetically, dew distils _ on the flowers (i e drops of water appear on them) ; mercy " distils." The retort is the representa- ' tive of the " twisted " wool, the glass vessel having been bent to form the condenser of the water vapour. . . , ,

It may be noted that the action of capillarity would ensure the purity of the distillate, for salts will only travel a certain distance. Bacteria also will not ascend to the brim of the vessel, except possibly in the case of typhoid bacilli.

When the water is bitter and altogether unwholesome, one should boil it, and add pure sand to it while it is boiling. It is

then distilled over drop, by drop by using the wool as mentioned

above.

It amounts to the same thing -if the water be shaken with clean sand, especially when this material has been burnt in the sun. When the sand has settled, the water will be harmless.

4. Drink wine with the water, for that removes such injurious matter as is of feeble penetrative power.

5. If water is scarce and not attempered, it should be taken with vinegar, especially in summer-time, because that prevents one from drinking too much.

899. Salty water : take vinegar with it, and syrupus acetosus into which has been placed pulse and various species of myrtle and medlar.

Aluminous- and bitter water \ take aperients afterwards. It. is also beneficial to take wine after it.

Sour water : take sweet things and oily things, mixed with julep afterwards. Chick-pea water, taken previously to the water, will make it harmless before one could wish. The same is true if one eats chick-peas first.

Stagnant and marshy water : these are putrescent. Do not take warm foods before drinking it. Afterwards take astringents made with cold fruits and potherbs, such as quince, apple, and

sorrel.

Thick and turbid waters. Garlic should be taken after such waters. Among the reagents which will clear these waters is alum of Yamen (of Arabia).

900. Other things which remove the harmful properties of various waters : onions, because these act on them like a theriac ; especially onions and vinegar ; garlic ; and, among cold things, lettuce.

901. Another good rule in regard to the diversity of waters which travellers are likely to encounter is this : to carry some of the water from his home, to mix with it the earths from the inn in which he has stayed last ; then carry some of the water to the inn to which he goes next, and mix that with the water he has brought ; and go on in this manner until he reaches his destination. ' Similarly he may take some of the clay (sand) from his own home, and use that to mix with each successive specimen of water, shaking them with it, until it has cleared them.

902. One should be sure to pass all the drinking water through a cloth, in order to make sure there are no leeches or other creatures in it, or any minute particles of evil nature suspended in it. [E.g. incidentally, minute ova !]

It is a good rule also to take a sour rob with one, to mix with

the various waters one is likely to have to drink.

8. Rules for Persons Travelling by Sea

903. Those who travel by sea often suffer from scotomia and vertigo, and the motion brings on nausea and vomiting, especially during the first few days of the voyage, _ after which it subsides. It is not wise to allow nausea and vomiting to continue longer than is required for getting rid of superfluities.* It should then cease.

904* Measures to prevent seasickness. It is justifiable to endeavour to -prevent sea-sickness. Thus, take fruit such as of quince, maciana, and pomegranate. Parsley seed made into a drink will prevent nausea as long as one lies quite still ; and if one cannot lie still, it soothes the sense of nausea. Absinthe has the same effect.

Among the things which prevent seasickness are : nourishing the mouth of the stomach with tonic acetous substances, and such things as prevent " vapours " from rising into the head. Namely : Lentils in vinegar (or dried and boiled with _ a little pennyroyal, or boiled till soft and then triturated and dried and kept in an earthen vessel : Aeg.) ; juice of sour grapes ; a little pennyroyal, thyme ; bread broken up in weak and fragrant wine, or in cold water. Thyme is sometimes added to that._

The nostrils should also be smeared over on the inside with white lead (cosmetic) ©i,ntment.

Persistent Sea-Sickness.— Avoid all food. Take a little vinegar and honey with water in which thyme has been infused, or pennyroyal water with some rme polenta ; or take some weak fragrant wine, with fine polenta. Take antibilious remedies. (Rhazes).

Simple Precautionary Measures.— (i) Counteract the disagreeable smell of the ship by sniffing at quinces, thyme or pennyroyal. (Aeg.) (2) Do not look at the sea (ib.) (3) Beware of the drinking water (ib.) (4) Note the diet already mentioned. (5) Have remedies against vermin. Mercury, oil long birthwort or wearing wool smeared with oil or mercury ensures against lice. (Haly Abbas) .

* The first vomitings which occur at sea are often beneficial, and therefore need not be interfered with.

END OF PART THREE

§ 254. When prescribing a " regimen," or programme to be followed by the patient, especially where the ailment is chronic, or liable to become chronic, the following headings require to be considered.

I. General. — The conditions regarding Light, Air, the Climate of the place, and the physical environment — place of residence or work ; the dwelling itself. The season of the year.

II. _ Special. — (i) The age and sex of the patient ; (2) The food, drink, and necessary evacuations ; (3) Sleep ; (4) Exercise ; (5) Clothing ;' (6) Personal habits : bathing, smoking ; marital life ;

(7) Occupation or livelihood ; (8) Mental environment and social conditions.

As regards Light : the importance of free access of light is well-known but is often neglected, and may account for some of the effects met with in the given case. An excess of exposure is equally faulty with deficiency.

' As regards Air — impurity of the air constantly breathed ; manufacturing towns ; confined rooms, stuffiness of the bedroom because too small, etc.

As regards Climate, ample suggestions are discussed in §181, 188, 305-322.

The importance of considering the Season is freely discussed in 261-273, 280-305. The habits as regards food, exercise, sleep, clothing, etc., must be adjusted according to the season.

Place of Residence. — Here belongs a consideration of the nature of the soil, of the water supply, of the prevailing winds ; the heating and lighting ; the drainage (322).

The dwelling itself. — Here we consider materials of construc-tion, proximity of other dwellings, the aspect of the several rooms, point of compass faced, the colour of the walls in the rooms, the stability of the window-frames ; type of fire-places ; cellarage, etc.

The age of the patient is considered in terms of the periods of life specified in 51. At each period there are certain variations of function and capacity which account both for the phenomena of the illness, and affect the efficacy of different modes of treatment — -physical and mental. The sex is necessarily considered.

Food and Drink.' — Here it is desirable that the physician should picture the actual meals he is advocating. It is not enough to make out a dietary in the form of a list of things allowed and things forbidden. The foods must be combined. The dishes may often be specified. The number of meals a day ; the place where they are eaten ; the actual time of day chosen ; the time occupied over the several meals ; the quantity taken at a meal ; the kind of cook-ing — all these things need watching and regulating. The whole

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subject of adulteration and contamination of foods must be studied ; the deleterious effect on foods produced by long keeping in shops or in refrigerators, etc. ; 'artificial ripening of fruits ; artificial methods of preserving foods ; addition of preservative chemicals,

etc.

It must here be emphasised that the idea of controlling diets by estimation of calories, and scientific calculation — so much a fetish in many places— overlooks that important personal factor which means so much for the ailing and sickly. " Man is a living organism, not a mechanism, and can produce a definite amount of protein and carbohydrate from a given quantity of food. . . . In practice

the value of a food depends on the physical properties of food-stuffs, but also on the assimilative- power of the digestive organs and the personal condition of the individual organs. (Muther). 134 " The public are apt to forget that not the quantity of food, but the efficiency of the gastric organs to digest and assimilate is the real criterion^' to go by." (ib.) Or, as has been wisely said: " Nature laughs at our scientific food values."

The actual composition of the meal may be considered Irom several aspects : the list of all possible articles which can be bought ; the chemical composition of each ; the food-value composition ; the taste or palatability ; the digestibility; the assimilabihty ; incompatibilities ; the effect on the bowels and urine ; the per-sonal idiosyncrasies (including anaphylactic actions) ; the relation to temperature of the air, season, age, sex, occupation ; the mode of preparation ; the materials used for cooking (water, steam, butter, margarine, fat, olive oil, etc.) Incompatibilities, both among solid foods, and among beverages, and between solids and fluids taken together or successively.

The action of the bowels must be seen- to, and secured, as often it can be, by the proper choice of foods and modes of cooking rather than the random exhibition of various purges and aperients,

3,nci bv exercise.

Sleep —Here we must~~go into :— the time of retiring to bed ; the time of rising ; the duration of sleep ; the kind of sleeping apartment; the position in bed ; the kind of bed ; the bed-clothes ; the night-clothes ; the nearness to a meal ; the quality of the meal last taken ; the time of day. (Repose taken during the day, re-laxation of the mind for the time, from cares, business worries, and domestic anxieties, etc.)

Exercise.— Special exercises may be prescribed :— breatmng-exercises, stretching exercises; gymnastic exercises; regulate time of day, relation to food, amount of clothing at the time.— Here belongs also the question of massage (kneading, stroking, pinching, tapping, beating, vibration of certain parts of the body : lower limbs, upper limbs, breast, abdomen, back, scalp, throat, face, and so on). See 739, sqq.

Clothing.— Adapted to the season ; materials used next to the skin ; loose or tight ; weight of materials used.

Personal Habits.— Prompt attention to calls of nature ; clean-

liness of skin. Smoking. Swimming and sea-bathing. Marital relations may need consideration.

Occupation or livelihood. — This often proves a determining factor if mistakes in advice are to be avoided. The influence which the daily occupation has in the commonest of our habits must never be disregarded. The occupation entails obedience to various rules impossible in many cases ; we must also consider whether the occupation is agreeable or painful, or entails the repression of one or other psychical wishes or carries with it restrictions of an ethical or religious or ambitious or social nature.

Mental environment.— -This is provided partly by the occupation ; it also includes the recreations ; the domestic side of life ; the social side of life ; amusements ; company ; friendships ; leisure etc. *

Part IV

GENERAL THERAPEUTICS

The Various Modes of Treatment Applicable to Disease

in General

General discourse on the Treatment of Disease.
The Treatment of Disorders of the Temperament.
" Evacuant " and " derivative " treatment.— Purgation, Emesis, Cupping, Venesection, Leeches.

The use of Liniments and Sprays.
The treatment of " obstructions."
Minor Surgery.
The relief of Pain.
Selection of Methods.

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I. General Discourse upon the Treatment of Disease.

905. The subject of 'treatment comprises three headlines : that of the regimen and diet, that of the use of medicines, and that of manual or operative interference.* By the word " regimen " we understand the systematic management of the several factors which we have enumerated as being essential to health, and among them diet has an (important) place. The prescription of a regimen is based upon data pertaining to the qualities of the nutrients to be selected, as well as those

belonging to the qualities which determine the choice of

medicines.

906. _ Treatment with Food. In regard to diet, the first question to decide is as to the quantity of each article of

food which should be allowed. Sometimes a given article of food is to be forbidden ; sometimes lessened ; sometimes no change need be made ; sometimes the amount taken is to be increased. The physician only forbids a food, or all food, if he intends that the digestive faculties [throughout the body] shall be left entirely free to complete the maturation of the humours. He prescribes a lessened amount of a food, if he wishes the digestive powers to be conserved. The very fact of taking nutriment is a tax on the digestive faculties ; therefore the withdrawal of a certain amount of food means a corresponding alleviation for them.

The physician must also be watchful in regard to two dangers — one, that the natural powers should become too enfeebled ; the second, that an illness should become too grave.

907. How to reduce the diet. — This may be achieved

* i.e. dietetics, pharmaceutics, surgery.

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in two directions— it is lessened either in amount, or in quality. In fact, by combining these two ways, one has a third method at one's disposal. To explain more exactly — an aliment may be bulky but poorly nutritious. For instance, pot-herbs, fruits. A person may eat plentifully of these without receiving much nourishment. On the other hand, an aliment may be small in bulk, but highly nutritious. For example, eggs ; the testicles of fowls. It is, for instance, necessary to lessen the nutritive value of food, and increase its bulk, in cases where the appetite is altogether excessive and " crude " humours enter the blood. So we lull the appetite by filling up the stomach, and yet see to it that only a small amount of (nutritive) matter enters the blood, thereby enabling the digestive products already in the blood to become " matured " (properly disposed of). And there may be other reasons. On the other hand it may be desirable to increase the nutritive quality without adding to the bulk of the food ; namely, when we wish _ to increase the bodily strength (vitality) and when the digestive power of the stomach is inadequate.

908. Diminution in the amount of food, or stopping food altogether is usually the line of treatment in acute illnesses. But sometimes we decrease ' the amount of food in chronic maladies also, though not to the same extent as in acute ones. The reason is that in the case of chronic maladies it is more necessary to see that the bodily strength is maintained, for we know that a long time will elapse before there can be a crisis or restoration to health. So unless the strength be maintained, the patient will not hold out until the time for crisis comes, and he cannot digest anything which takes a long time to digest. But in the case of acute illnesses, the crisis is near at hand, so we may confidently expect the vitality _ to hold out until that time. Did we have any doubt about this, we should see to it that the diet was not lowered too much.

. It is not so necessary to diminish the amount of food in the earlier stages of an illness, when the symptoms are not very marked. In this way one conserves the natural powers. But as the illness progresses and the symptoms become more severe, so the amount of food is to be lessened according to the principles already stated. In this way the digestive powers are helped at the (critical) hour of struggle.

The regimen must also be made definitely attenuant during the height of the disease. The more acute the malady, and the nearer the crisis, the more attenuant must the regimen be

made, unless there, should happen to be contra-indications such as we shall name in the special part.

909. Aliment -possesses' two functions besides mere nutrition ; (a) rate of penetration, or absorption : rapid penetrative power, as for instance, wine ; slow penetrative power, as for instance, roast meats and fried meats ; (b) compactness of the substance. of the digestive products in the blood, and consequent retention (e.g., this is the feature of the digestive products from pork and veal) ; or attenuation of substance, with consequent speedy dispersal (as is the feature of the digestive products of wine and figs).

We need to make use of an aliment of rapid penetrative power when we wish to remedy a loss of vital power, so as to revive it when there is not sufficient time or (digestive) power to justify waiting till the aliments are digested in their ordinary course, slow as that may be. We have also to take care not to take easily digested food after food which is only slowly digested, lest the result of the mixture be undesirable in the way already explained. We should also take care to avoid foods of solid texture, since we know for a fact that these give rise to obstructions (in the ducts and tissue channels as well as in the intestines).

Therefore we will select highly nutritious foods which digest slowly, when we wish to restore the strength of the patient, and make him fit to undertake strenuous exercise. We select a feebly nutritious food for a person whose pores are choked with dense matter.

910. Treatment with Medicines.

There are three rules to follow in selecting medicines : (1) selection according to quality — whether hot, cold, moist, dry; (2) selection of the amount to be given [Dose]. There are two sub-divisions here : (a) measurement in terms of weight, (b) measurement of its quality — degree of hot, cold, etc. quality, (3) the rules relative to the time of administration.

_ In regard to (1), the choice according to quality, the decision depends, strictly speaking, upon one's knowledge of the type of the malady to be treated. Once one knows the quality of the malady, the appropriate medicine is that whose quality is exactly opposite ; just as in the case of health, it is the like wherewith it is maintained.'

In regard to (2), there are two factors to consider, in order to arrive at an arbitrary measure : (a) the nature of the member, (b) the degree .of illness. Over and above these, are

factors determining the suitability and fitness of the remedy, namely, species, age, custom, season, geographical position, occupation, strength, physique.

911. To understand the nature of the member one must know these four things about it: (i) its temperament; (ii) its construction; (iii) its position and relations; (iv) its strength.

(i) Temperament. — It is necessary to know the normal temperament of each member because this gives the clue to the degree of intemperament, by showing to what extent this has departed from the normal. One would thus form an idea as to the amount of change which is necessary to restore the part to health. For example, if the temperament in health were cold, and the present (intemperament) be hot, then the change from normal is considerable. A considerable amount of infrigidation will be necessary. But if both were hot, quite a trivial degree of infrigidation might suffice to restore health.

(ii) Construction. We have already stated that there are four modes of construction of a member,_ and the reader must study the matter in that place. But in addition it is necessary to be aware that (a) certain members have been constructed with openings of easy ingress, with ample spaces (receptacles) at the entry and exit (of the channels)* so that the waste products can be expelled readily by (appropriate) tenuous and attempered medicines. There are others which are not so formed, and in these cases stronger medicines become necessary, (b) Some members are loosely constructed, while others are dense in texture. For the former, tenuous medicine will suffice, whereas for the latter a powerful remedy- is necessary. The strong medicine is the more necessary in cases where there is neither cavity nor receptacle — either interiorly or externally. Next in degree of strength of medicine is that which serves in the case where there is a receptacle in one of the two parts ; and next to that is the strength of medicine applicable in the case where there is a receptacle on both sides. Examples of this : the kidney, which is dense, firm, brawny, and solid in texture ; the lung, which is loose in texture [and obviously has pervading channels as well as an exterior orifice].

* These channels comprise (a) the ordinary anatomical inlets and outlets of the bodv • (b) orifices of ducts which open into the alimentary tract, etc., and are not visible exteriorly ; (c) channels of microscopic size which would not be included in an ordinary anatomical description ; (d) tissue spaces which are not defined by limiting membranes, but are traversed by fluid constituents of the body. ine terminal portion of a duct often shows an ampullary dilation which comes under the category of a " receptacle " in the text, (e) Expansions of lumen of this kind also occur in the vascular channels ; (f) perivascular and peritendinous sheaths.

(iii) Site or position. One knows about, the site when one knows the position and the relations of the member. The advantage of knowing-the anatomical relations of an organ is that one can then choose the part which will draw the given medicine, for thus one compels the medicine to travel in the desired direction. For instance : if there is pathological matter in the blood channels' of the liver, one will evacuate it by way of the kidney ; if it be in the bile ducts, one will evacuate by way of the intestine. For the former is (physiologically) related to the kidney, and the latter to the intestine.

912. There is a threefold value in knowing the position of a part.

(1) Accessibility or remoteness. — If the organ to be reached is -accessible, as is true in the case of the . stomach, an attempered medicine brought to it will act on it (with certainty), whereas if the organ be distant, like the lung, the action of an attempered medicine will be nullified (because it has been changed by digestion) before it can reach the lung itself^ Therefore, a stronger medicine becomes necessary in this case.^ When the organ affected is readily accessible to the medicine, so that the virtues of the latter at once come into _ play, the efficiency of the medicine will be directly proportionate to the severity of the malady. But if the medicine has to travel some distance before reaching the affected organ, and the_ malady more deeply seated than can be met by the penetrative power of the remedy, then the potency must be higher than usual. For instance, the amount of vinegar needed is greater when applied in a plaster for sciatica.

(2) One must know what substances to admix with medicines in order to bring them rapidly to the affected organ. For instance, one must admix diuretics with a medicine for the urinary tract ; and saffron with medicines intended for the heart.

(3) One must know by what route the medicine is to be brought to the affected part. Thus, if we have ascertained that there are ulcers in the lower bowel, we inject remedies by the rectum; whereas if we know that the ulcers are in the small intestine, we give the remedies as fluids by the mouth.

913. Sometimes it is advantageous to consider both situation and relations to other organs at the same time. This applies in the case where the whole of the morbid matter has been discharged into the member, or when it is in process of being so discharged. For as soon as we know that it is in process

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of descent to the particular spot, we may draw it out of the body altogether by making use of the following four principles :— ■

(a) The rule of diversity of parts.— One may draw from the right side to the left ; from above to the parts below.

fa) The rule of physiological relationship. — Thus, when the menstrual flow is controlled by applying cupping to the physiologically related organ— the breasts.

(c) The rule of directness.— Thus, for maladies of the liver, venesection is done in the right basilic ; in the case of the spleen, the left basilic vein is used. _ _

(d) The rule of distance.— The member into which the morbid matters are drawn must not be too near to the one

If by 'chance the whole of the morbid matter has already been withdrawn, both sides of the body may be used together. For we may, if we desire, draw the material into the member itself or first draw it into an adjoining physiologically related one and then from that. For instance, we open both saphenous vein's when treating maladies of the uterus, and we open the one (median) vein under the tongue, when treating double quinsy.

When you wish to draw morbid matter to another member to that from which you are drawing it, first allay the pain there. And take care that in so transferring the matter you are not

crossing a vital organ.

9I4 (i v)_The value of assessing the power or strength oja member lies in three directions: (1) it enables us to direct the treatment in the order of nobility of organs Thus, one must not use potent drugs which might act on the principal [vital] organs to so great an extent as to risk producing a harmful effect all over the body. So, when it is necessary to withdraw matter from the brain or liver, one would not attempt to do so at the same period of the disease, and one must not apply mfrigidantstoo assiduously. Again, when we wish to apply external applications over the liver and at the same time introduce resolvent medicines, we must take care to combine astringent drugs of aromatic character with them, so as not • to risk interfering with the functional capacity of the organ. The same rule applies when giving fluid remedies. In applying these rules, the order of importance of the organ is : heart, brain, liver. _

(2) The treatment is directed to an organ of physiologically related function, provided the organ selected is not a vital one, like the stomach and lung. For instance one does not give very cold water in cases of fever, when the stomach

is weak. You are aware, too, that to administer undiluted remedies, which are relaxing to vital organs or to organs closely related to them, is simply to Imperil life.

(3) One takes the sensibility of an organ into consideration—whether it is keen or dull. That is, one must beware of giving drugs possessing injurious (mordant, pungent or toxic) qualities, to very sensitive organs, or organs of special sense — for instance, plants belonging to the euphorbia group.

915. There are three kinds of medicines in the administration of which we must be very cautious. Those which are

extremely resolvent ; those which are cooling ; and those which are contrary in property. Examples : lead and copper salts, and the like.

This, then, is how one chooses medicines according to the nature or character of the organ to be treated.

916. Choice of medicine according to the severity of the illness. — For example, when the degree of morbid heat of the body is unduly great, it must be counteracted by means of a medicine of strongly infrigidant character. But when the abnormality consists in a marked degree of coldness, this is met by exhibiting a strongly calefacient medicine. If the degree of abnormality is not marked, remedies of weaker quality will suffice.

917. Choice of medicine according to stage of the disease. — When we know the stage at which a disease is, we adjust the treatment accordingly; Thus, if an inflammatory focus is in the initial stage, we shall apply a remedy which will act upon it alone. If the disease is near the terminal stage, we may apply a remedy which will resolve it (at that phase). If the disease is between these two stages, we should combine both forms of remedy. If the disease be acute, we should at first aim at attenuation by means of an attempered regimen ; but at the later stage we should seek to procure attenuation.' In the case of a chronic disease, we should not aim at attenuant treatment in the early stages, and we should use a modified attenuation at the later stage, though it is true that an attenuant regimen disperses many chronic maladies besides fevers. Again, if a malady is due to active fermentation of the humours, we procure evacuation [inch venesection] at the early stages, without waiting for the " matter " to undergo maturation. But if the fermentation is only moderate in degree, we wait till maturation is complete before undertaking the evacuant

measures.

918. You can easily recognize which factors are favourable to the end in view (and how to adapt them accordingly). Thus, air is the most important of all such, and one needs to take care that it shall assist the action of the medicinal treatment and not contribute to an aggravation of the illness.

919. In the case of maladies where any delay in treatment might entail a loss of vitality, or where one wishes to do more than merely alleviate, we shall begin with a strong medicinal agent. But if there is no fear of such an eventuality, we may proceed in orderly fashion, using a milder remedy first and the stronger one if that proves insufficient.

Further, you must not forsake the direct rule of treatment if you find that there is only a tardy response to it ; and, on the other hand, you must not commit the fault of delay when there is no contra-indication. In addition, you must not confine yourself to one single medicinal remedy throughout

the treatment, but you must interchange the medicines (all the time), because when (the tissues) are accustomed to one they cease to respond, and moreover, the same tissue or member, or the body as a whole, may react to one given medicine atone time or phase and not at another.

920. When you do not know the nature of a malady, leave it to Nature ; do not strive to hasten matters. For either Nature will bring about the cure or it will itself reveal clearly what the malady really is.

921. Treatment of fain. When the malady is accompanied by pain, whether the pain is the cause or the effect, as in the case of blows or falls, the first thing to do is to allay the pain. If it is necessary to induce a stuporose state, do not go beyond the use of such as white poppy. Its anodyne action is well-known.

When the member is hyper-sensitive, nourish it with such things as render the blood viscid, as for instance, cooked gram. If this is not sufficient, and there is no reason to be afraid of m-frigidation, such things as lettuce may be used.

922. Remember, too, that among the advantageous contributory factors in treatment is the help afforded by anything which exalts the sensitive and vital faculties : for instance, joyfulness. In consequence, one sets out to please one's patient, and ever tranquillise him by anything which can reasonably gratify him. Sometimes one may advantageously arouse his sense of shame, making him blush, and so leading the sick person to avoid what is harmful for him. (Cf. Anecdotes in Chahar Maqala 7 p. 82, 84).

A measure which is akin to the preceding is that of removing from one country to another, from one climate to another. Or a change is made from one external form to another. To do this, one particularises the various forms and movements which will act upon the given member, or alter its temperament. Thus one may advise a youth with disorders of vision to avoid very close writing and looking at very bright objects ; a person with squint [wry-neck : alternative reading! should look into a narrow mirror so held that the effort of turning towards it will help remedy the malposition of face, forehead or eye.

Another rule to be observed is to omit strong measures of treatment at the strong seasons, as far as possible. For instance, one -refrains from violent purging, from provoking emesis, or from opening a part, or applying cautery, during summer or winter.

923. _ Gentle treatment is to be applied when two maladies are conjoined into one, such that contrary measures have to be carried out at the same time. For instance, if the malady is mfngidant, and its cause is warming— or conversely— the malady is to be treated with calefacients and the cause is to be treated with infrigidants. E.g., fever requires infrigidation, and the obstructions (in the channels) which give rise to the fever need the application of heat. Again, the indications

in colic are warmth, mcisives, and attenuants ; but the pain to which it gives rise needs cold, and analgesics.

924. Remember, further, that not every case of plethora is to be treated by its contrary, namely, evacuation (by purging or by venesection, e.g.) nor is every intemperament to be treated by inducing a contrary temperamental state. As a matter of tact, a liberal and good regimen will often suffice by itself to remedy plethora or intemperament.

2 - — The Treatment of Disorders of Temperament.

925. When an intemperament occurs without (abnormal unhealthy) matter, the treatment is to alter it ; but if there is abnormal matter, this has to be evacuated. Usually a single evacuation will suffice to amend the previouslv existing in-temperal state ; but sometimes it is not sufficient for the pur-pose, and the intemperament will then require rectification, after evacuation has been procured.

We may therefore state that the treatment of intempera-ment comprises several modes of procedure.

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928. An intemperament is either chronic (longstanding), in which case the treatment is strictly by contrary, and a complete cure is achievable thereby ; or it appears at the terminal phase of an illness — in which case the treatment is by anticipation. _ Thus, treatment by contraries is instanced by the giving of theriaca for the putrefactive processes associated with quartan fever, and of (ice) cold water to abolish the fever of tertian fever. Treat-ment by anticipation is instanced by the use of evacuation, namely, by hellebore in the case of quartan, and by scammony in the case of tertian. The hellebore applies to atrabilious humour ; the scammony to bilious humour. Our object is thereby to prevent or forestall the (morbid) changes.

927. If in any given illness you are in doubt as to whether heat or "cold is responsible, and you therefore desire to put the matter- to the test, you must be careful not to overdo this, and not to be misled by secondary super-imposed symptoms.
You must note that the appropriate moment is the same for infrigidation as for calefaction. But one is more apprehensive regarding infrigidation, for heat is the friend of " nature." One is as apprehensive of moistening as of dessication, but the period during which the former is permissible is longer. More-over, the state of moistening and desiccation is meach case maintained simply by fostering the factors which give rise to them, and they are modified simply by re-inforcing the contraries of those factors.

928. Heat is re-inforced by the agents already expounded (415). Putrefication of the passages is carried out next, by procuring the expulsion of wastes, the removal of plethora, and by opening up obstructions. Finally the heat is to be con-served by preserving a moderate degree of moisture.

Cold is reinforced by assisting any factors which bring it about, by repressing the (bodily) heat, and by dispersing the

heat unduly — to' which dryness contributes by its essence, and heat secondarily.

929. In treating undue heat by removing obstructions, one must guard against producing too much infrigidation, for in. that case there is a risk of rendering the obstruction still greater by conversion (of the matter) into a stone. One must also take care not to render a hot intemperament more marked. Hence the treatment by abstergents should be entered upon gradually. It is advantageous to use an abstergent which is sufficiently cooling (e.g., barley water, and endive). But if this be not adequate, one makes use of an agent which is

neither « hot » nor "cold;' ; and if this is inadequate, one employs an agent which is, warm and tenuous. One need not be anxious m making use of such a remedy, for it lends further assistance by provoking diaphoresis, which renders the body cooler, thereby causing more good than the heating effect can harm; and anyway, it is easy to remove the heating effect once the pores have been opened.

930. It may happen that the innate heat is so much reduced by such measures) that the digestion of the morbid humours is interfered with Yet there are some who boldly pursue this wrongful method and ignore the fact that undue reduction of the innate heat means loss of vitality, which is specially to be expected in persons much weakened by illness. This result occurs even though the matter is rectified in some other way and other maladies follow on, either in the form of simple ^temperaments, or by arising out of " cold " matters which are opposite m quality to the temperament. When a cold mtemperament is established, it is as difficult to render it warm as it is easy to do when it is only beginning. To render a cold mtemperament warm at the outset is easier than to render a hot one cold at the outset. But to render a hot one cold at the end of the process, though difficult, is nevertheless easier than to_ render a cold one hot at the end of the process. The reason is that excess of cold itself implies complete, or nearly complete, destruction of the innate heat (cf. 894).

_ 931. Infrigidation is sometimes associated ' with desiccation sometimes with moistness, and sometimes occurs independently of either. But dryness is more persistent, if associated with infrigidation, and moisture is more conducive to the supervention of coldness. AH the factors producing calefaction aid desiccation if they are preponderant. All the factors producing infrigidation aid humectation if they are preponderant. Nothing is so likely to have this effect as inactivity and constant use of the bath, even the full-length bath. R e domestic as opposed to the Hammam.]-We have already* made this known to you.—Dilutcd wine is also strongly humec-

. _ You must note also that if it is an old man who needs infrigidation and moistening, it is not enough to reduce the temperament to equability, one must continue till the temperament is.coM and moist beyond the normal, because such a temperament is acquired secondarily, though quasi-natural to the old person.

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932. Note 3 too, that when changing the quality of a temperament, it is often necessary to reinforce it by admixing with the remedy somethihg'of contrary quality. Thus we give vinegar with medicines which are hot towards a given member, because then their virtues can penetrate into the member ; we give saffron with cardiac infrigidants, because saffron carries such remedies to- the heart.

933. Oftentimes it happens that a medicine which pro- duces a very marked change of temperament does not have a lasting effect ; this is because it is so tenuous that its action does not pass on to completion. In this case we must admix with it something which will render it less tenuous and more stable, even though one risks the production of a contrary effect. Thus, we mix wax with balsam, and so on. The one remedy is thereby preserved long enough to ensure its proper action being accomplished.

2. How to Determine the Manner and Moment for

" Evacuation."

934. There are ten indications which show when it is right to procure "evacuation" [i.e., blood-letting, wet-cupping, purgation, enemas, diaphoresis, use of leeches, etc.] :

(i) Plethora ; (2) vitality ; (3) temperament ; (^ap- propriate symptoms (thus, we need not evacuate the bowel m a case of diarrhoea) ; (5) habit of body or physique ; (6) the age of the patient ; (7) the time of the year ; (8) the state of the atmosphere; (9) the geographical situation ; (10) the patient's mode of life regarding "evacuation " ; and (1 1) his occupation.

Evacuation should not be carried out when there are contra-indications in these respects.

: . — Plethora. If the state is the opposite of plethora (vacuousness), evacuation is obviously contra-indicated.

2. Strength of Patient. (Vitality). Weakness in any

of the three primary faculties is a contra-indication. Neverthe- less, we may decide to act in spite of such a weakness, if more harm is likely to accrue from neglecting evacuation. This applies to the sensory and motor faculties since we are more anxious to avoid injuring them if they are weak. In fact, the same applies with all the faculties.

3. — Temperament. Contra-indications are : hot and dry temperament ; cold and moist temperament, in which there is little or no heat. One may act vigorously, however, if the temperament is hot and moist.

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_ 4. — Symptoms. Certain unfavourable symptoms are contra-indications— such as endemic diarrhoea and cramp (spasmodic diseases). „

5. — Physique or habit of body. — Excessive leanness or sparenessof build is a contra-indication, because the breath is so readily dispersed. For the same reason, when a person is weak and lean, and_ has much bilious humour in the blood, he must be treated blandly, and evacuation avoided. The fliment should be such as will engender good blood, (making it) incline to coolness and moistness of quality. In this manner the temperament of the humour will be corrected, after which the patient will perhaps be strong enough to tolerate evacuant measures.

Similarly, one must not venture to " evacuate " a patient who is accustomed to eat sparingly ; or, at least, one should postpone such a measure as long as possible.

Obesity is a contra-indication, because one runs the risk of making the frigidity dominant, and of allowing the flesh to compress the vessels up to occlusion, thus blocking the flow 01 innate heat ; or, of forcing out the effete matters from the vessels and driving them inwardly.

6 -~~ The A S e of the Patient. Avoid evacuant measures when the fulness of growth has not yet been reached, or when the patient is neanng the end of decrepitude.

7. — Avoid evacuant measures if the time of the year is extremely hot or extremely cold.

9. — Geographical position. A southerly country which is very hot is contra-indicative, for persons with diarrhoea are usually of hot temperament (" hot-tempered.") The association or two adverse conditions [the extraneous heat and the evacua-tion] is badly borne, because the bodily faculties are enfeebled by dispersal of vitality, and because the extraneous heat draws the matter ' outwardly, and the medicine draws it inwardly. iking thus drawn in two opposite directions, it tends to remain where it is.

Avoid evacuant measures in very cold, northerly countries.

10. —Habits ; Avoid evacuation when the habit is to have evacuations infrequently.

n_. — Occupation. Avoid evacuant treatment when the occupation is one which in itself is evacuant in effect, e.g., bath-attendants ; carrying (heavy) loads on the back ; all toilsome or arduous physical labour.

935 . In procuring evacuation there are five points to

consider. — (i) Removal of that which is to be evacuated, followed by rest to the parts, unless there is atony (lassitude) in the receptacular spaces, (see 911, footnote), or overheating of the blood — whether in the form of ephemeral fever or of other

accompanying maladies. — Thus there may be excoriation of the mucosa, which brings about diarrhoea ; or ulcers in the bladder. Such things may be advantageous, and yet not appreciated as such by the patient because of the pain and suffering they cause him until the symptorn has been removed. (2) To choose which organ is to be " evacuated " : thus nausea is removed by emesis ; burning pain in the abdomen is eased by purgation. (3) To- use as member of egress that which corresponds to the organ to be evacuated. Thus for maladies of the liver the right basilic and not the right cephalic must be used. To make an error in such a matter might be harmful. The member chosen for the site of evacuation must be less important (" noble ") than that which is to be evacuated, lest the morbid matter pass down into the more important organ. The channel of exit should also be the natural one ; thus for the blood-vessels of the liver the urinary tract ; for the ducts of the liver the intestinal tract.

Sometimes the organ to be evacuated is itself the one to take as the site for evacuation, and yet it is the seat of chronic or acute disease. In this case it would be risky to induce the humours to traverse it, and they should be diverted to another

organ instead.

Sometimes there is a risk of superimposing another malady on the first, by inducing a superabundance of the humours in the second part. For instance, if the morbid matter is drawn downwards from the eye to the throat, choking [cedema of glottis] might result, and therefore one must proceed with such a measure carefully and with gentleness.

Nature herself [i.e., the vegetative soul], often acts on the same principle, and protects a weak member by effecting the evacuation through a part other than that which would be the normal one for that member. Very often the part at which the evacuation actually occurs is quite distant, and opposite in position, and it comes to be a matter of doubt as to which member is being drained in this way. Thus the head may be drained by the anus, or the leg or the foot, and one could not say whether the evacuation is of the brain as a whole or only from one ventricle.

(4) To decide on the proper moment to evacuate. In

chronic maladies, as .Galen rightly says, one does not wait for maturation. You know what is meant by the term " maturation." Therefore one should give attenuant drinks such as water of hyssop, of thyme, and herb seeds, before commencing to carry out the evacuant treatment, and after the maturation stage has been reached. , But in acute maladies, it is best to wait till the maturation stage has been reached, especially as long as the humours are stagnant. Once they appear to be on the move, one must hasten to drain them away, because the damage accruing from their movement is greater than that which one risks by evacuating immatured humours — especially if the humours are tenuous, and especially if within vessels and not in the tissues in which they arise. When the morbid

humour is confined to one particular member, it will certainly not move out of.it until maturation has occurred in it, and its character has become modified – as has already been explained for you in the proper place.

Again, if we feel doubtful as to whether the vitality (of the patient) will hold out until the time for maturation has arrived, we shall proceed to procure evacuation, noting carefully whether the material to be evacuated is labile or viscid. In the latter case we must first render the material tenuous. And we shall know that it is viscid by the fact of the premonitory dyspeptic nausea having passed by, or by the existence of tensive pain under the hypochrondrium, or by the development of an inflammatory swelling inwardly. We must also carefully make sure that the passages are patent. Having taken these precautions you will be able to drain the morbid matter by the bowel before it has become purulent.

(5) The amount to be evacuated. This is judged from {a) the quantity of material already evacuated, (b) the strength of the patient, (c) the symptoms which remain afterwards. If symptoms should still remain, we must either reduce the amount of evacuation according to the amount already estimated, or we consider whether the symptom is itself to be treated, as would apply for instance in the case of plethoric spasmodic disorders.

(The marginal reading adds that the quality of the material must be considered, for it will not become mobile until it has been rendered tenuous.)

936. There are two ways of evacuating morbid material and eradicating it from the place where it has lodged :. (i) by attraction from a distant place, (ii) by attraction to a neighbouring

place. And the- most appropriate time for carrying out the treatment is when there is no sort of plethora of the humours in the body, and they are not moving downwards into the member to which there is attraction.

Let us suppose, for instance, that- there is a considerable flow of blood from above the mouth in a man, or from piles in a woman. To remedy this we may proceed to do one_ of two things. Either we draw downwards towards a neighbouring part of diverse character : that is, we cause the blood to flow down into the nostrils and emerge from them, in the one case ; and provoke the menstrual flow from the uterus in the other. Or we draw to a distant part of diverse character : that is, in the former example we bleed from veins in the lower part of the body, in the case of the male, and bleed from vsins in the upper parts of the body, in the case of the female. _

937„ When the attraction has to be made from a distant part, one need not undertake to do so from both sides of the body, but just from that which is corresponding. Thus if the material is at the upper end on the right side, one would not draw it away to the lowest part on the left side, but to the lowest part of the right side (and indeed this would be the most necessary),

or to the upper part of the left side, supposing there were as much distance between the two as there is between the humerus and the other, and not a matter of just the two sides of the head itself. For one would draw morbid material from the right side of the head down to the lower parts of the body, and not to the opposite side of the head.

938. Suppose one wishes to draw morbid material to a distant part— then one first allays the pain in the part, for this will itself lessen the amount of material by attraction, since pain exerts an attracting effect. But if it do not move _ to _ the part as soon as desired, avoid violent measures ; for while it is true that violence would procure the desired -movement, yet the material would become attenuated and not amenable to the attracting influence, and would simply pass right into the painful

part. .

939. It may prove sufficient to draw the mateiial away without actually evacuating, because the very attraction arrests its progress to the desired member. But even so, our object in securing attraction may still have been attained, supposing that one would be satisfied to have accomplished the attraction downwards without the additional evacuation. This is done when one bandages up the opposite member, or applies cupping-

glasses, or rubefacient medicines — in short, any measure which, allays pain,

940,, Morbid materials are more readily evacuated when they are in the vessels than when in the tissues and joints, for sometimes it is difficult to remove them thence, and evacuate them. And in evacuating them from such situations one inevitably evacuates other things with them.

941. A person from whom diseased matter has been evacuated must not partake of much food or unhealthy articles of food and anything which has an indigestible nature. If by chanceone is for some reason obliged to do so, one should do so gingerly and cautiously, in small portions, so that that which enters the body may be digested and prove harmless accordingly.

942._ The drawing of blood is a special method of evacuating morbid -humours which are all increased equally or proportionately. _ It is not the removal of one humour which is simply increased in amount or has its own particular quality destroyed.

943. To carry out evacuant treatment to an undue degree is to bring about febrile conditions.

If the bowels, previously usually loose, are bound, this condition will give rise to some other malady, and it will be proper to treat it by repeating the evacuation. For instance, supposing the discharge of sanious matter from the ears or mucous passages of the nose should cease, leading to vertigo,, then if the flow be restored the vertigo will be removed.

_ It is less injurious to leave a little of the morbid matter

behind than to strive to evacuate everything to the most minute fragment, thereby risking a dispersal of the vitality. Nature herself often removes the last remnants.

When the humour is of a kind which necessarily exists, you need not be afraid of how much blood you take as long as the sick person is able to sustain it. For sometimes one is bound to evacuate (bleed) up to syncope.

944. When the person is robust, and the humoral matter plentiful and depraved, evacuation must be done gradually. Further, if the morbid material is extremely viscid or widely diffused, or admixed with much blood, it cannot be emptied at one sitting. This is true in the case of sciatica, longstanding arthritis, cancer, old-standing skin diseases and obstinate furuncles.

945. Remember also that purgation draws morbid matters from the upper parts of the body, and discharges them below. Purging is, therefore, an attractive force in two different

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directions— to the near and to the remote region of the body. It is most useful when the. morbid material is stagnant. Therefore, when the morbid matter is either above or below, one may-draw it to the opposite direction, away from the position in which it has lodged. Attraction is procured by emesis ; eradication by the converse.

946. Furthermore, one varies the kind of blood-letting according to the positions from which the blood is taken up-as has been explained. _ .

A person accustomed to a good diet, and having a healthy digestion, is less in need of evacuant measures than

are most men. .

Persons residing in hot countries need little m the way

of evacuant treatment.

4 ._The General Rules to be Observed in Procuring Emesis or Purgation, and their Mode of Action (upon

Morbid States).

947. Whenever purgation or emesis is to be procured, the food sufficient for one day should be divided up into portions to be partaken of in instalments. The aliments and drinks are diversified accordingly. For under the circumstances the stomach acquires the desire to expel what is in it, either upwards or downwards. The stomach is greedy for foods that are not diversified, and if no other food be taken in addition it holds its contents very stubbornly, especially if the amount be only small. This must be borne in mind by those who are naturally

" loose."

948. Emesis and purgation and the like do not apply for those" who follow a good regimen. This is because a person who controls himself properly will not need anything but mild attention, and may be excused even from exercises, bathing, and massage. If such a person be in a plethoric state the humours concerned will be healthy, i.e., sanguineous. Consequently, such a person requires not purgation but blood-letting, if indications for cleansing the [channels of the body]

should arise.

949. If both blood-letting and purgation (by hellebore and similar violent medicines) are needed, begin with the blood-letting, because this precept of Hippocrates in his book on Epidemics is sound. If, on the other hand, the plethora is of phlegmatic humours admixed with sanguineous humour, so that they are viscid and " cold," one would begin with pur-

gation, because blood-letting would make the humours still more coarse, and more viscid.

950. In short, if the humours are in balanced proportion, _ blood-letting is preferable. Then, if a plethoric condition still persists, purgation is undertaken. If the humours are not in balanced proportion, first purge the superabundant humour until balance is restored, and then proceed with the blood-letting. If the patient should have taken medicine before the blood-letting (which was an error on his part), he shouM defer the subsequent blood-letting for a few days. ' If purgation is needed within a short time after the blood-letting, the appropriate medicine may be given then. Sometimes^ however, the person who has (improperly) taken the draught of medicine, - instead of first undergoing a blood-letting will develop fever and restlessness before it can be done. If the restlessness is not allayed by the usual remedies (sedatives), the blood-letting should be done.

951. _ Evacuant treatment is not necessary in every case of excessive plethora. It may be indicated by the severity of the. malady, or by the quality of the plethora, rather than its degree. (Indeed, a good regimen will often make such measures unnecessary : marginal reading).

952. It may happen that there is a need for evacuation, but something intervenes which forms an adequate substitute, such as fasting, sleeping, correcting the unhealthy state of the temperament which has been produced by the plethora.

953. Then there is a form of evacuation which itself serves to protect one for instance from an attack of gout, or from _ an epileptic seizure which one knows will occur on a certain date, especially in spring. In this case one must apply the evacuant measure before the time is due, choosing the appropriate method— that is, choosing between blood-letting and purgation, according to the kind of things to be evacuated m the given malady. It may be also wise to apply desiccants externally, and to use absorbents for the purgation as one does in the case of those afflicted with dropsy.

954. Sometimes the medicine to be chosen as puro-ative must have a quality corresponding to that of the humour^to be evacuated. Thus, scammony is needed for evacuating bilious humour. A drug which is of a different quality should be mixed with it. as an adjuvant for the purgation without preventing proper evacuation. For instance, myrobalan. Should the ten£ perament afterwards become unhealthy, one must just correct it.

955 Emesis should be procured in cases where there is an internal inflammatory mass, because such cases are difficult to purge. But if purgation becomes essential, use such agents as pellitory, seed of safflower, apozema of polypody, cassia

fistula, and the like.

956 Hippocrates also says that the best way of cleansing a person" of spare habit, and of a nature such that vomiting easily takes place, is to procure emesis ; and this_ should be done in summer, spring, or autumn," but not in winter. But if he is of medium habit, it is better to purge. If evacuation by emesis is necessary, it is better to wait till summer, avoiding it altogether if it is not really necessary. _ ^

957 Prior to procuring purgation or emesis, the numour to be evacuated must be attenuated, and the channels of exit must be widened, and their outlet opened, in order to save the body from trouble. The last-named is achieved by an aperient (aperitive) regimen. That is, the patient accustoms himself to obev the calls of nature, and to maintain the_ motions loose. The actual medicines for purgation and emesis are reserved 'ill later. Moreover, it is difficult, wearisome, and dangerous, to procure purgation when the belly is wasted.

8 2 « Articles of Food which Increase the Alvine Discharge

s DJ ' (Aeg.) and Purify the. Blood.

Mildly aperient foods : —
Soft eggs. .

Potherbs; beet, mallows, cabbage, sorrel.

Shellfish soup. . .

U^ M ^ r A:CtLt°te^ boiled in water with salt.
mSree leaves ; polypody root (oakfern), two drams sprinkled on pickle

OT tak Zth o" SdTock taken with or without 2 drams of bastard saffron.
Aloes to the amount of 3 chickpeas taken at supper-time
Dodder of thyme in wine, taken after a moderate supper.

Doddef oi thyme'&.dram) in wine, infused in vinegar and honey, taken before breakfast in spring time.

958 An emetic may be at the same time a purge (a) when the stomach is strong or (b) when taken during a state of prolonged fasting ; (c) when gastro-ententis is present ; (d) if

the bowels tend to be loose ; (*) when the patient is not accustomed to emesis ; (/) if the medicine is itself actually heavy (weighty) and passes down the intestines quickly as a result

959 A purge will act as emetic (a) if the stomach is enfeebled : (b) if there is much dryness of the stool ; (c) when the medicine is very unpleasant ; (d) when it produces nauseative dyspepsia.

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Should a purgative not act, or should it not remove the mature humour by its action, it will cause the humour to be distributed throughout 'the body; the result will be that other humours become changed into the same kind of humour, and the body is flooded with it.

980.. There is one of the humours which readily responds to emesis, namely, the bilious ; and there is one which is resistant to emesis, namely, the atrabilious. The serous humour occupies a middle position in this, regard.

981. In the case of fever, it is better to purge than to procure emesis. When the humour is passing downwards, as m a case of lienteric diarrhoea, emesis is not advantageous!

982. Among purgative medicines, that is most harmful whichis compounded from drugs which show marked variation in their rate of purgation ; for the result is simply confusion. The drug acting more speedily comes into play before the next, and sometimes the one will expel the other before it has come into operation at all.

983. Should a person take some drink which has a purgative action or is emetic, at a time when the bowels are emptied, he is sure to develop vertigo, or colic, and distress.

• That which finally is expelled will leave the body with the greatest difficulty.

984,_ Lastly, as long as a given drug gets rid of the superfluities, it will cause no restlessness. If it should cause restlessness, one would know that something more than superfluity is being discharged. Moreover, we shall' know when the superfluous humours have actually been got rid of, by the fact that the humour lost by emesis or by purgation is now changed into another kind of humour. The cleansing process of the body will have passed on to a harmful degree if the lining of the intestines is beginning to be lost, .and the stool is black with _ a fetid odour. Also, if a prolonged sleep follows the purging or emesis it will show that the evacuation is complete, and salutary. Also, if there is great thirst after purging or emesis, it shows the purgation i-3 maximal and satisfactory.

985. Purgative medicines expel humours in co-operation with the attractive faculty concerned with the given humour; maybe, attracting the coarse and rejecting the subtle humour! This happens in the case of expulsion of atrabilious humour.

He who asserts the purgative itself gives rise to that which it

attracts, or that it attracts first chat which is tenuous, is in the wrong. It is true that Galen says so, yet he says accurately

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that a purgative medicine which is not poisonous, will, if it _ do not purpe or undergo digestion, give rise to the same kind of humour as it ordinarily attracts. However, an assertion of that kind is hardly relevant. It would seem that Galen, in making this assertion, considers that there is an agreement m substance between the attracting drug and the attracted humour, and that that is why they mutually come together. But it is not true to say so, for if like attracted like, then a larger bulk of iron would attract a smaller, a larger bulk of gold would draw a smaller bulk of gold to itself. To discuss this is not in the province of the doctor. •

986. You should note that it is the humours m the blood vessels which become attracted by the purgative or emetic. This attraction goes on until they reach the stomach and intestines, which finally expel them in virtue of their own nature (ie, the natural expulsive faculty). It is only rarely that humours which are drawn out by a purgative should ascend into the stomach; if they did, they would be expelled by vomiting If they should fail to ascend into the stomach, it would be because of one of two reasons— either (i) the purgative medicine has passed on speedily into the intestines ; or (2) having taken the purgative drink, the " nature " proceeds to drive it from the mesenteric vessels to the lower parts of the abdomen and not to the upper parts— because to do so is nearer and simpler, and because there is nothing beyond, which will mechanically impede their progress [i.e., the distal parts of the digestive tube will not compress or block the proximal partsj. _ lhis indeed will be evident, considering that the " nature " will act by the shortest route of exit.

987, If the medicine possess an attractive power which will hold the humour, then the expulsive power may still overrule, assuming that the drug only attracts towards the route indicated. An emetic is different in this respect. For, when it reaches the stomach it lingers there, and draws the humour towards itself out from the intestines, and by its own power overcomes the resistance offered by the natural power [of peristalsis downwards]. n

968o The humours which medicines draw outare usually in the vessels or neighbouring structures, because it is in the veins that the seat of attraction lies. But medicines also draw humours out which are not in vessels, e.g., the lungs ; m this case they are drawn to adjoining organs, like the stomach and intestines, but not via the vessels.

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969. Remember, too, that it is possible to draw humours from the body by the use: of desiccant medicines, using- .the

attraction, for instance, by way of the nostrils. This applies^ for instance, in the case of dropsy.

5. —^Purgation and the Rules relative Thereto.

970. In the preceding chapter we have shown that the way to prepare the body for the purgative to be administered is to cause the pores to dilate and the " nature " to relax. This applies specially in the case of " cold " maladies.

In brief, the rule : " soften the ' nature ' before purging " ensures safety in all cases except that of gastro-enteritis. In that case, n'othing is to be done, because the disease is itself the cause of the superfluity present.

971. Something of an emetic character must be admixed with the laxative agent to prevent the latter from leaving the stomach before it has done its allotted work. Or, rather, the two ingredients should be so balanced in power that their respective functions shall both come into play (in the right order) ■ — -the purgative action in the one direction, the emetic in the other.

972. People who lisp are liable to gastro-intestinal catarrh, and such people do not stand strong purges in conse- quence. All the same, many do run the risk of gastro-enteritis because of the materials which flow down (" rheums ") from the head.

It is dangerous to administer a purge when the fecal matter is dried up within the bowels ; in such cases it is best to get rid of it by means of an enema, or by an emollient broth.

973. Bathing and Purgation. The use of the bath for several successive days before purgation is a good preparative measure, as it is attenuant. There must be no contra-indication, however. A small interval of time should elapse between the bath and the draught of medicine, and one should not take a bath afterwards because the effect of that would be to draw the morbid material to the skin. The bath is only of use for binding the bowels, especially during winter ; for at that season one need not be afraid of going straight into the first room .; the heat will not interfere with drawing out the humours, and in fact assists in virtue of its emollient effect.

974. Lastly, one should not take the purgative medicine, while in the hot room of the bath (lit. the air of the room should

be only moderately warm), lest the medicine should give rise to sweating and a sense of. oppression. This is one of the pre- cautions which must be noted.

Other adjuvants, or preliminary measures, are : massage and the inunction of oils.

Avoid the use of violent purges for persons who are not accustomed to take medicine, or to drink it.

Do not administer a medicine to persons who are in a state of "dyspepsia with nausea," or whose humours are viscous, or who have distension of the hypochondrium, or inflammation or obstruction [of channels] in the inward parts. In _ all such cases, the condition must first be rectified by ordering emollient aliments, the bath, rest (in bed), and by avoiding anything, likely to arouse disturbance of, or inflammation in, - the humours.

Persons who are accustomed to drink stagnant water, and have enlarged spleens, will need strong aperients.

975. Sleep and Purgation. If the purgative used be strong, it is advisable to take it overnight, for by sleeping after the dose, it will act more efficiently. If the purgative be a mild one, it is better not to sleep after the dose, because the vegetative faculty would digest it.

Whether the medicine be strong or weak, one should not go to sleep when it is about to act.

On the other hand, a person should not immediately begin to walk about after taking an aperient. He ought at any rate to rest [long enough] after it to enable the " nature " to embrace it and insinuate itself into it. For unless this insinuation takes place, the " nature " will not be influenced.

976. Nauseating Aperients. When a medicine has a nauseating odour, one should make use of aromatic agents, in order to prevent nausea occurring. Examples _ of these are : mint, rue, celery, quince, Khurasan earth (Lemnian earth : marginal reading), sprinkling rose water and a little vinegar on them. If a person greatly dislikes the odour of a medicine, let him compress his nostrils. If he dreads the medicine in any case, let him first chew a little tarragon (Artemisia dracunculus), or pellitory (pyrethrum) to dull both taste and smell. If he is afraid of being sick after it, the limbs may be bandaged up, and an astringent taken after swallowing the medicine. In the case of pills, some doctors give them a coating of honey, or boiled honey, or boiled sugar. Another useful artifice is to coat the pills with wax softened in a little oil. Another

expedient is to fill the mouth with water or the like, and then swallow the pills with it. yarious expedients may be adopted to meet various temperaments or personal proclivities, thus enabling the patients to swallow the drug without being aware of it being a " medicine."

Decoctions should be taken tepid. Pills should be taken with tepid water. "If the temperament is cold, the abdomen and feet should be kept warm.

977. When the patient's mind has become soothed in this way, he should take graduated exercise, for bodily movement favours the action of the medicine. After an interval of time, he may take warm water, but not enough to dilute the medicine, or get rid of it or weaken its strength, unless the time has come

to arrest the aperient action. The use of hot water lessens the harmful character of the medicine.

If the patient has a hot temperament, and a weak conformation (of humours), and a weak stomach, the medicine should be preceded by some bland tenuous drink, such as barley water or pomegranate juice. Or, speaking generally, the stomach should contain light tenuous aliment. Otherwise it is better to take the medicine fasting.

978. If the purgative is given in summer time, fever may develop. Therefore when the person has taken the medicine he should not eat or drink until the medicine has exerted its effect. And if the action is delayed, he should go to sleep unless he wishes to stop its action altogether.

979. If a person cannot tolerate food owing to the stomach ■being in a " choleric " state, bile readily pouring into it, or if he

has had a long extended fast, it is well to take a little bread which has been soaked in a little wine after he has taken the (purgative) medicine and before the bowels have acted ; this measure will help the action of the medicine.— The anus should be laved with hot water and not with cold.

980. Some people assert that if pills are to be administered with decoctions one should select those of like character. Thus, if one orders pills to expel choleric humour, the decoction to go with them must be such as fumitory. Pills chosen for expelling the atrabilious humour require a decoction, for instance of dodder or polypody, or the like. Pills for getting rid of serous humour need a decoction of such as centaury.

981. When the body to be evacuated is dry in nature with firm flesh, a strong medicine like hellebore and its allies,

will be needed, taking great care to associate it with unctuous aliments to exert a humectant effect*.

982. Finally, powerful medicines like hellebore are to-be avoided because they produce convulsions if the bowels are empty at the time, and also produce irregular disorderly movements in the moistures if the bowels are over-loaded, besides drawing into the intestine things which are difficult to expel. Sour milk will remove the harmful influence in the case of (purgative) herbs having poisonous milky juices, like mezereon and spurge (euphorbia group).

983. A medicine often leaves its odour behind in the stomach, making it appear to be still there. The remedy for this is to partake of a barley ptisan or barley-meal cake, for this will have the effect of cleansing the stomach, and is more efficient . than any medicinal powder. Moreover, the ptisan is the best beverage to take if the medicine fails to act, or if one wishes to make the action of the bowels mild and gentle. But if one were afraid about this, it would be better to administer mead, or syrup of honey, or a solution of nitre in

water, giving either a collyrium or an enema.

984. Causes of failure of action of a purgative ; {a) constriction of the passages, due to (i) the kind of temperament ; (2,) some lesion of the neighbouring parts. Thus, in the case of persons afflicted' with paralysis or apoplexy, the passages of ingress and egress for the medicines are constricted, f and purgation is rendered difficult in such persons.

(F) It is dangerous and unprincipled to give two purges on the same day. .

(c) Affinity. — Every purgative medicine which has a. specific affinity for a given humour will produce agitation and confusion (disorderly movements, cf. 982) if it does not reach the humour, and the purgation will be difficult. The same thing happens if a contrary be prescribed with it..

The immediate action of a purgative medicine is to draw out the humour for which it has affinity ; it then draws out whatever humour comes next in amount and in degree of attenuation ; and so on* in turn with others, with the exception of blood itself. For the " nature " retains and stores up the blood to the very last.

■ * Indiscriminate- purgation in dry persons predisposes to phthisis, and to-dropsy, if the stomach is weak (Alsaharavhis) .

\ In other words, cardiospasm and pylorospasm, as well as a general contracted state of the intestines, with atony of the longitudinal coats.

(d) Remoteness of humour. — It is difficult (for a medicine) to draw out a humour from a distant part (of the body).

(e) One should see to it that there is not much salt in the food, if one wishes to take a purgative medicine.

If there is a risk of nausea or faintness after taking the purge, it is well to take radish-water as an emetic for two or three days before, and- to eat radishes.

985. A draught of medicine may induce nausea, oppression, faintness, fluttering of the heart, griping, especially if it fail to purge or induce sweating. But it is often necessary to induce emesis also, and an astringent is then unnecessary. Barley water may be taken after the purging because it removes the evil effect of the medicine and cleanses out whatever remnants may have been left behind in the bowel.

986. Persons of cold temperament, in whom the serous humour predominates over the others, should follow the purgation by nasturtium which has been rinsed with hot water and oil.

Persons of hot temperament may take fleawort with cold water, oil of violets, conserve of roses, or julep.

Persons of equable temperament may take linseed after

the purging.

987. Undesirable consequences of purgation, (i) Armenian bole and pomegranate juice remove the risk of excoriation of the intestines by the purge. After the medicine has acted, the things we have named should be taken, though they may not be retained.

(ii) If fever follows the medicine (" mixture "), barley water is the best thing to take. Syrupus acetosus should not be given for two or three days after the purging, because it is excoriative, and one must wait till the intestines have regained their original strength. But the Hammam may be entered on the second day after the purging, for if there should happen to be any residual humour, the bath will get rid of it. If you find that the idea of a bath is pleasing and that it is agreeable, you will know that the last remains of humour have been got rid of, and nothing more need be done ; but if the patient does not like the bath, and finds it sets up disorderly movements (or restless feeling) of the bowels, it shows there is still something to expel.

(iii) Remember that if the intestines are weak, purgatives excite an unduly violent and unduly -prolonged action, so that a great deal of medicine is needed to arrest it. The same is

true for old persons, in whom purgation is liable to be m-

JU Fever and agitation of the bowels will follow purgation, if wine be taken after the medicine.

(iv) Pain in the region of the liver may follow both purga-tion and blood-letting. This is relieved by a draught of hot

988. Time for taking purgatives. The time of rising of the greater dog-star; the season during which snow still stays on the mountains; the season of extreme cold— are times when purgatives should not be taken.. Medicine should be taken during spring and autumn. Spring is the season during which the snows melt from the mountain-tops. Then comes the summer which is a period during which attenuant agents, should not be taken. Autumn is the contrary to spring, and is an appropriate time for the use of attenuant agents.— If a person has to take an aperient in winter he should at any rate make sure the wind is in a southerly direction. Some say that the opposite rule should hold for summer, but there is a difference of opinion about this.

989 Care should be taken not to acquire a habit ot taking medicines as emollients for the bowels, for it will prove dis-advantageous in the end.

Strong purgatives depress those of dry temperament.

Exercise should be avoided after a mild medicine, lest its potency be impaired. Of weak purgatives, the best are violets with sugar. .

When the purgative which a sick person requires does not act, he should not move about more but less.

Purgation may excite movement of the sanguineous humour or make it agitated, and give rise to fever. Blood-letting may be well under these circumstances.

6, On Excessive Purgation, and the Time Proper for

Using Astringents.

990„ Thirst is one of the indications that catharsis is to be ended. Therefore, if diarrhoea (from drugs) persists _ without any thirst one need not be afraid the action is excessive.

But thirst may develop — not from undue purgation, or excessive purgation, but (a) because the stomach itself is hot or dry, or both ; for these conditions soon lead to thirst ; (b) because of the character of the medicine— it may be pungently hot- \c) because the material itself is " hot "—as, for instance,

bile. In the case of material of this kind it is not long before thirst comes on. The contraries of these causes delay the appearance of thirst.

If therefore you find that the thirst is excessive and the bowels are acting freely, you may apply astringents, especially if factors which cause thirst to develop quickly are not present. But_ if these factors are present one should not delay, but use astringents as soon as thirst is evident.

Sometimes the time to apply astringents is shown by the fact of that having been discharged which was intended. Thus if the bile has been discharged and mucus begins to emerge, this shows that the medicine has already acted too much. How much more certain is it that the action has been too prolonged if ordinary bile in the stool has given place to the appearance of atrabilious humour ? or to that of blood — which is still more dangerous ?

If the medicine has given rise to colic, one should proceed to carry out what is said in the chapter on colic.

7-— How to Restore a Person Suffering from Excessive Purgation to a Normal State.

991. The exhaustion which arises from excessive purgation is accounted for by (1) weakness of the vessels ; (2) undue patency of their orifices ; (3) the laxative cleansing out the orifices ; (4) some unhealthy state of temperament arising from the purgation ; (5) other such.

Therefore when the purgation has been too free, bandage up the upper limbs and the lower ones, beginning at the axillae and groins respectively. Give a drink containing a . little theriac or " philonium." If possible, let the patient be made to sweat in a bath or in steam (the head being free, the rest of the body under blankets). After copious sweating has been produced, give massage and let the patient take astringent drinks. Fragrant

aromatic liniments should be prepared, using myrtle water, sandalwood, camphor and fruit juices.

The exposed members should also be rubbed, and heat should be applied in the form of dry cupping over the lower ribs, and between the shoulder-blades. If deemed necessary, one may apply plasters prepared with roasted bruised barley and astringent waters over the stomach and intestines. Oils may be used in like manner — for instance, quince oil, oil of mastic.

The patient should be protected from cold air because that helps out (the contents of the bowels) and induces purging ;

and he should be protected from over-warm or hot air because that is enfeebling. He should also be invigorated by the use of fragrant perfumes and by sipping astringents and by giving plain biscuits or rusks soaked in wine of mild bouquet. But all these should be given hot, and before giving them give bread with pomegranate juice, and various kinds of dishes prepared wi^h roasted barlev meal and the ground cortices of white poppy.

A tried formula of this kind is as follows : three_drams by weight of nasturtium seeds are toasted and boiled in butter-milk until they have clotted. This drink is extremely beneficial. — Astringent aliment such as is made with the juice of sour grapes, and the like, and made cold with snow is to be advised. In addition any measure which helps to restrain the movement of the bowels— for instance, the induction of emesis with warm-water keeping the limbs warm with hot water, and not allowing the extremities to get cold. Faintness may be averted with wine and if this fails to have that effect, narcotics may be given as a 'last resource, and other powerful medicines which are noted in the chapter on arresting diarrhoea.

For all that, it is far wiser for the doctor to anticipate all such events by having ready lozenges and pungent powders against any need for them, and also to have at hand the appliances for giving an enema.

g_ The Procedure when a Purge Fails to Act.

992 When a laxative fails to act, and induces colicky pains and abdominal distress, so that the patient feels ill, and uneasy, and suffers from impaired vision, dizziness and migrainous headache, with yawning and stretching, one must have recourse to enemas, suppositories or a drink of 2 drams— or 3 kirats— of mastic in tepid water. .

The medicine also sometimes behaves in this way because the patient has taken astringent drinks, or has eaten such things as quince, apples. Such things cause tightness of the cardiac sphincter, allay nausea, and forcibly drive the medicine downwards instead of upwards, and they also reinforce the

natural faculty. , . ,

If the enema is ineffective, and such bad symptons appear as rigidity, eyeballs moving outwards, or retching, then blood-

letting will become necessary. _ _

Even if untoward symptoms do not appear m spite ot the purgative failing to act, it would still be well to do a blood-

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letting in two or three days, lest the morbid humours should pass into one of the vital organs.

9. — The States (Hal) of Purgative Medicines.

993. Some purgative medicines are very malignant m character For instance : black hellebore, the yellowish kind of turbith (which is not good, like the white variety) ; agaric— the blackish kind instead of the white and pure kind ; metereon Inasmuch as these are harmful, if they are taken and evoke bad symptoms, it is best to get rid -of the medicine out of the body as soon as possible, by means of emesis or diaphoresis and give antidotes such as (rotted) yellow turbith. The evil character of many of these drugs and the mental disturbance they give rise to, may be removed by taking excessively cold water, or by sitting in it. 7

Beneficial for this also are (medicines) which antagonise the acuity (of the purge) by glutinosity, unctuousness and soothing character.

994. Some medicines are compatible with certain temperaments, but not with others. Thus, scammony will act only feebly if at all when the patient is living in a cold climate, unless a large dose be administered ; so this is usually done in the

f £ u 6 7 U ?• , In S ° me countries > too > one must introduce into he body only the properties of the medicine, and not the actual substance.

995. _ Medicines of pleasing odour must be mixed with purgatives m order not to risk loss of strength in the members Cordials are good adjuvants, for they reinforce the vital breath in every member m addition to their action in virtue of their tenuous nature and ease of penetration.

Two medicines are sometimes combined, one of which expels its corresponding humour rapidly and the other slowly In this case the one will complete its action after confining the other m its corresponding humour, and then impairing its power. When in due time the second comes into play, it does so m a feeble manner, so that ineffective straining movements occur. Something must therefore be admixed to help and hasten its action. Ginger. will serve in the case of turbith, because it does not dull its action. You must learn how to mix them properly in order to produce this effect.

Besides this _ you must take into consideration all those principles which we have set forth in speaking of the

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properties of purgatives (laxatives), under the heading of the general principles regarding the use of simples.

996. Purgatives act in virtue of five kinds of property : (a) a specific resolvent property (e.g., turbith) ; (b) power of expression (e.g., myrobalan) ; (c) lenitive property (e.g., manna) ; (d) lubricant quality (e.g., mucilage of fleawort ; prunes ; [liquid paraffin !] ; (V) a certain poisonous character, in the case of the violent purges, which itself produces the purgation by direct aggressive action upon the natural faculty. Consequently such properties should be met by associating medicinal agents endowed with the virtues, of bezoar stone [specifically antidotal for poisons]. Bitterness, sharpness, pungency, astringency, and sourness help the action of a medicine in which that particular kind of property is present. Thus, bitterness, and sharpness help the resolvent property; pungency and astringency help the expression ; sourness helps the incisive property (e.g., of mucus) and paves the way for lubrication.

997. To ensure a lubricant action, one must not combine the drug with one having expressive power, in such a way that both properties are simultaneous and equal ; they must _ be arranged so that the one property does not come into_ action till after the other. Thus of two medicines, the lenitive one should be able to exert its own function before the one with the function of expression ; the latter will then act after the lenitive effect has been produced. The same principle applies to the other cases.

io . List, of Topics Belonging to this Subject which are

to be Found Dealt With Elsewhere.

998. Purgative and lenitive epithemes and potions, and so forth, are deferred to the Formulary (Book V.) Under " Simples " we give the rules for modifying the respective simples according to the age of the patient ; how to assist their action, how to administer them in fluid form.

Pills must not be given -if they have become_ so dry as to be as hard as stones ; and they must not be given in a soft state lest they should be absorbed and held within the body. _ The proper time to give them is when they are just beginning to get dry, and yet yield to the pressure of the fingers.

ii. — On Emesis.

§ 256. What is meant by emesis.— The act of vomiting may occur (a) from errors of diet ; spontaneously (b) from a diseased

condition either in - the stomach or elsewhere ; (c) by deliberate induction. This chapter is concerned with the last-named. There are two types of emesis under this heading : (a) where a single act of vomiting is aimed at— the stomach being emptied of Its contents, whether food merely, or contained humours, or humours drawn into it by a preparatory process of treatment ; (b) where the vomiting is to go on for a period of time— for instance, more than an hour, on the permissible assumption that a single act will not

necessarily subside much sooner than an hour.

(N.B. — The text has been slightly re-arranged in order to obtain a more consecutive picture.)

999„ Contra-indkations. — ^Meh who are difficult subjects for the procuring of emesis are :

(i) So by nature ; contracted chest ; bad method of breathing ; long, thin neck ; [prominent chest, Rhazes] ; lean habit — for in such persons the bile should be adequate ; liability to haemoptysis ; liability to throat inflammations [i.e., pharyngotonsillitis] ; persons with poor digestion (" weak stomach ") ; very obese subjects ; those with weakness of vision ; epileptics. In such cases it is better to use purges instead.

_ (ii) So _ by custom. Such persons are not accustomed to be sick, and if vomiting be induced by powerful emetics, the effect will not last, and the vessels in the respiratory organs will be liable to burst, and " phthisis " will develop.

Another contra-indication. — Pregnancy ; for the menstrual superfluities in such a person will not be got rid of, and the great exertion entailed in the emesis may lead to restlessness. One must allay the vomiting (should it occur during this period). In other cases, vomiting may be encouraged.

1000. Objects in View. — [To prevent indigestion after immoderate eating ; to remedy intoxication after immoderate consumption of wines ; to evacuate phlegm or mucus from the stomach ; to lighten the head. (Aeg.).]

The immediate intention is to empty the stomach alone, and not the intestines. The remote intention is to relieve the head and finally the whole body of humours which are drawn down and got rid of from the upper parts. — And you know that the emesis has been beneficial when it is followed by relief, good appetite, good breathing and normal pulse ; and by noting the condition of the other functions of the body.

The treatment of chronic maladies. The following chronic maladies are benefited, such as: — dropsy, epilepsy, [jaundice: Aetius]; melancholy, leprosy, [arthritic diseases : Aetius]; gout, sciatica.

1001. Procedure. — When one is unaware as to how a • given person will respond to an emetic, one should first give a mild one, and not venture on a strong one like hellebore and the like until after the effect of the former has been observed. Should the first one not agree, and it be still necessary to administer .an emetic, one should adopt preparatory measures in order to get him accustomed to it. Thus, one orders some emollient articles of food, made unctuous and sweet ; and then to desist from exercise, and then take oil with wine ; then give good food, especially if vomiting is difficult to induce, for if it fails it is better that the food still in the stomach should be good than bad. The patient should not masticate the food much which he is taking before intending to procure emesis.

1002; Rules regarding the food to take after emesis. — If the . vomiting continues even after the contents of the stomach have been emptied, the next meal should be postponed until the patient is very hungry. The thirst should be allayed with a drink of undiluted syrup of apple or the like, but not with julep or syrupus acetosus, because these would themselves have an emetic effect.

An appropriate dish is the special one prepared with fowl ; viz., first boiled awhile and then roasted before the fire. Three glasses of wine should be taken after it.

The meal should be postponed to midday, and be preceded by a drink of hot rose water if the vomitus be unusually sour, and the pulse is suggestive of fever.

Should the vomitus be very dark bile, a sponge soaked in hot vinegar should be applied over the stomach, and the next meal should consist of something different from the foods taken to procure vomiting, for to use the same kind of food would simply fill up the stomach and excite it to discharge

the food.

If the vomiting has been copious, the best thing to give is small birds such as chickens or pigeons which are just beginning to walk. But the patient must take care not to eat up the leg-bones, for these are heavy for the stomach, and will remain in it a long time.

1003. Articles of food, etc., which facilitate or induce emesis. Almonds dipped in honey and the like ; barley water taken with its faex and honey ; fresh pennyroyal ; confection of bruised beans ; decoction of radishes ; decoction of narcissus bulb (Aeg.) ; herb rocket ; cucumber root boiled in honey (Aeg.) ; green marjoram (Mant.) ; leeks ; meat-fat swallowed

in lumps (Aeg.) ; oil of privet (Aetius) ; old pickles [onions, ptisan of pulse made with honey ; rocket ; moistened pompion seeds and cucumber seeds pounded with honey ; sweet cakes ; sweet wine ; tepid drinks ; (Aegineta)] ; tepid chamomile -tea ; water with butter, and the like.— A special dish prepared with unleavened bread, oil, melon, cucumber in its seeds or the roots well ground up, and infused in sweetened water ; soup made with radish.

A person may elect to use intoxicating wine to procure emesis, but it will not do so unless a large quantity be drunk. Ale, also, may act as an emetic, provided it be combined with honey, and is taken after a bath. It will also prove purgative as well.

A strong emetic like hellebore should be taken fasting, unless there is some special contra-indication, and it should be taken after the second hour, and after the bowels have been emptied.

1004. Methods of assisting the act of vomiting. — The use of a feather will incite the 'movement. If so, good ; if not, the patient should walk about a little ; and if that fails, he should go into the bath. As midday approaches, let him do running exercises. The feather with which vomiting -is induced should be anointed with, for instance, henna oil. [The throat may be tickled simply with the finger, which should be smeared with iris ointment. Aeg.] Should distress in the stomach, and spasms arise, let the patient take a draught of hot water, or of olive oil, for that will either bring on vomiting or empty the bowels.

Another way of helping it on is to apply warmth to the stomach and extremities, because this will induce nausea.

At the time of vomiting, it is a help to bandage the eyes with a double turn of bandage ; and a light binder may be applied round the abdomen.

If the effect of the medicine comes on precipitately, the patient should keep still, inhale pleasant odours, have his limbs rubbed and compressed ; a little vinegar should be given as a drink, and he should chew apple and quince with a little mastic.

Moving about makes vomiting worse ; repose lessens it. Nausea is the first premonitory symptom. [Then profuse salivation.]

1005. Ill-effects produced by vomiting.- The worst effect which may happen is intense spasm of the stomach, and a burning

in the stomach. This occurs if a violent emetic like hellebore be taken. It first produces salivation, after which a copious discharge of watery fluid appears, and finally a viscid or slimy fluid. The colicky pain persists, and the other symptoms pass on to nausea and distress, which increases. The bowels may begin to act after the movements of the stomach have quietened down and the patient has lain down to rest.

i 006. Ill-effects produced if the emetic fails to act. — If vomiting does not occur and the distress increases, and distension occurs, and the eyes start out, and get very red, and profuse sweating comes on, and the voice fails, death will ensue unless something is done.

The best thing to do in this case is to give an enema, which you must have ready beforehand, and a dose of honey . prepared" with hot water. In his drink, the patient should have some oil of antidotal character, like oil of lilies ; and this should be persevered with until emesis occurs ; he will not choke'

with it.

Difficulty of vomiting may arise because the humours are too-tenuous. In such a case, they must be thickened,_ so barley meal is taken which has been made into a cake with cooked pomegranate seeds.

1007. Ill-effects often resulting from vomiting in any case. Sordes form in the mouth and round the teeth. Deafness may come on. While emesis benefits the body, it is injurious for the eyes (and see 1011.)

The sign that the cause of the nauseative satiety is passing down away from the stomach is that it is being expelled by the bowel after the vomiting is over.

If purgation is followed by vomiting, it shows there is something still to be expelled.

Blood-letting must not be done consecutively upon emesis. One should allow three days to elapse, especially if there is any heaviness in the pylorus, or if there is a humour lodged there.

1008. Proper time for procuring emesis. — The summer-time is the most appropriate season for inducing emetic treatment, and if a person had to undergo a course of emesis, whose physique (see 999, i) is not appropriate for this kind of treatment, the summer is the best time in which to undertake it.

• The best time of day in summer is midday, because the air is then hottest.

I2 - — The Treatment for Arresting Vomiting.

1009. The procedure to follow in order to arrest vomiting is to rinse the mouth and to lave the face with water, to which vinegar or sour wine has been added, for this relieves the aching of the head. A little mastic may be taken in apple-water or cyder. [A cup of -black coffee may be given. Aeg.] He should abstain from food and water. He should take a long rest._ The abdomen should be anointed [or a mustard plaster applied over the epigastrium. Aeg.] He may enter the bath, and make his ablutions rapidly and leave it quickly.

If it is necessary to give any food, let it be of good flavour, substantial and readily digestible.

Annotations by Costaeus to this chapter refer to sea sickness In this case, if much bile is being brought up, all food should be stopped, or only the merest taste of light food allowed. If the vomitus consist of phlegm light food may be allowed. The reason is that in the former case there are sure to be remnants of the unhealthy humour left behind in the stomach. If the vomitus consisted of mucus or phlegm, one knows the stomach is empty, and one may consider whether one should leave the stomach devoid of food or not.

If the emesis is the result of a medicine, food must not be taken unless the stomach is weak, in which case one may give a little light food with three glasses of cold water. °

: 3- — The Advantages Obtained by (Therapeutic)

Emesis.

1010. Hippocrates advised vomiting to be induced monthly and for two consecutive days. On the second day the difficulty of the first day is obviated and that which has entered the stomach is fully emptied. Hippocrates claimed that health was conserved thereby. To exceed this would be harmful.

Emesis carried out in this way gets rid of mucus and bile, and cleanses the stomach. For in the case of the stomach there is no cleansing secretion like that for the small intestine — where the bile cleanses the mucous membrane as it passes down the bowel.

Emesis clears heaviness of the head ; clears the vision ; removes nauseative dyspepsia. It benefits persons in whom bile is apt to pass into the stomach and decompose the food. For, if vomiting precedes the meal, the latter will always enter the stomach* without being contaminated, and so the sense of loathing is removed which proceeds from oiliness of food, as also the depraved appetite— namely, the longing for sharp, sour, or pungent things.

Emesis is. also beneficial for flabbiness of the body, and for

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ulcers of the kidneys and bladder. It has a powerful effect in (anaesthetic) leprosy; in persons with an unhealthy _ colour of skin ; in gastric epilepsy, jaundice, asthma, tremor, hemiplegia. It is also an effective treatment in cases of impetiginous skin diseases in which there are ulcers covered with scabs.

It should be procured once or twice a month — after a heavy meal. It is well not to follow fixed time intervals.

Emesis is a great help for persons whose temperament is primarily bilious, and who are lean of habit.

I4 . The Evils which Follow on too Frequent Emesis.

1011. To procure emesis to an undue degree is injurious for the stomach, and weakens it and renders it susceptible to (noxious) matters. It is prejudicial to the thorax, and to the vision, and to the teeth. It is harmful in cases of long-standing pains in the head, except when these are due to gastric disorder_ ; and in cases of " epilepsy of the head " when the cause of this is not in the lower limbs. _ ,

The superfluity which explains the excessive emesis is injurious for the liver, the lung, and the eye ; and it may lead to rupture of blood-vessels.

The custom of some people of eating to excess even beyond that which the stomach will tolerate, and then procuring emesis [to enable more to be taken] is one of the things which ends in chronic disorders. Such persons must be advised to cease the habit of repletion, and must take measured amounts of food and drink.

i$, How to Remedy the States Incident on Emesis.

1012, We have already given methods for arresting

vomiting.

Tightness and pain under the hypochrondnum are relieved by applying upon the stomach-region cloths wrung out of hot water, by the use of lenitive oils, and by dry cupping (using

fire). .

Persistent Spasm of the stomach is relieved by taking greasy, easily digestible broths ; the area should be anointed with oil of violets admixed with oil of mallows .. [variety not stated] and a little wax.

■ Hiccough : If this is persistent, give a sternutatory, and sips of hot water.

Hemetemesis : This is referred to in the next chapter.

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Lethargy, spasmodic diseases (including lockjaw), " cold '' maladies, loss of voice. — In such cases bandage up the extremities tightly, apply a cloth over the epigastrium wrung out of oil in which rue and cucumber (agrestis, or asininus) have been boiled, and administer honey in hot water as a drink.

Drowsiness, or swooning (trance).— This is treated in a similar way, and the oil is also instilled into the ear.

16. — Concerning Excessive Vomiting

1013. Let the sufferer sleep, and as long as he can. The extremities should be bandaged in the same way as one does for arresting diarrhoea. Over the stomach apply invigorating astringent plasters.

If the vomiting is so violent that humours are continually being discharged and even blood comes, milk should be given, mixed with wine, to the amount of four glassfuls, because this antagonizes the evil quality of the medicine, and arrests hemorrhage and soothes the " nature." If you wish to clear the blood from the breast or stomach so that there is no risk of it clotting, administer syrupus acetosus in small doses, making it with honey or sugar, and making it icy cold by means of snow. Liq. ext. purslane taken with armenian bole, is also beneficial in some cases.

If you are afraid a person has taken too much medicine of any kind, purgative or otherwise, procure emesis.

Emetic medicines are to be selected according to their degrees of potency, and according to the mode of administration applicable to each. These points, and especially the use of hellebore, are dealt with in the Formulary (Book V) and under " simples."

§ 257. Annotation by Costaeus : The object underlying some of the above measures is to centralise or concentrate the life-breath in the interior of the body (i.e., round the solar plexus) and prevent it from being disseminated over the body, in which case there would not be enough in the vital centres to maintain life.

17. — On Enemas

101 4„ The enema is an excellent agent for getting rid of the superfluities in the intestinal tract, as well as for allaying pains over the kidneys and bladder, and for relieving inflammatory conditions in these organs ; for relieving colic ; and for drawing superfluities from the vital organs of the upper parts of the body. Such acute superfluities impair the function of the liver, and are apt to produce fever.

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Among the advantages of enemas is the fact that by their mean's the remnants or residues of the evacuants which are left behind are cleared away. ;

[Enemas are useful to relieve constipation, when the stomach is weak and will not tolerate purges. Aeg.]

Form of enema ; the method of giving an enema — see the chapter on colic in Book IV.

Best posture for giving an enema. — First lie supine ; then turn over on to the painful side.

Best time for administration. — When the air is cold ; because heaviness, pain, restlessness and nausea do not then supervene ; or, if present, they will decrease.

The use of the bath in regard to the administration of enemas. -^-The purpose of the bath is to arouse movement in the humours, so that they may disperse. The property of the enema is to draw out gases and the imprisoned humours. For this reason it is best that the bath should not precede the enema. In a case of intestinal ulceration, if a bath were necessary to relieve the fever or any other symptom, the risk which there is of the enema being retained would he met by applying a poultice of hot millet or frumenty over the epigastrium and umbilicus, or over the anus and thigh.

§ 258. Materials for Making Enemas.

If the humour in the intestine is sero-mucous : give beet, decoction of dried figs, dill, honey, nitre, root of wild cucumber.

If the enema is used to remedy undue dryness : give marshmallows, fenugreek, chamomile, oil, or small quantities of honey — all of which are emollients. A half hemina of oil (a half-pint) may be given. (Aeg.)

The addition of honeyed water makes the mixture more efficient than plain water. The mixture must, of course, be tepid.

Astringent enema : vervain (Celsus) .

Acrid enema : sea-water with or without oil, nitre or honey. This kind of

enema is very drastic and painful. (Celsus).

The patient must resist the first desire to go to stool. (Celsus).

§259. The modern usage is much more simple. Plain water, soap-suds, or thin gruel is the usual base, and the amount to introduce is from a half to three half-pints of fluid. To either of these bases may be added one ounce of castor oil or glycerin, or castor oil with a half-ounce of turpentine. Olive oil is sometimes used (6-10 ounces). Half-ounce injections of glycerin are also popular.

18. On Liniments

1015. Liniments are among those useful remedies which reach the diseased condition itself. They belong to two groups (1) fluid, (2) viscid. The former are more often required than the latter. If the viscid variety is used to modify the consistence of

the fluid variety, a plaster results. The fluid portion will then penetrate to the affected part, the viscid portion remaining behind. It is the penetrant part which is beneficial. Example : making a plaster with coriander and crushed barley, for application upon scrophulous lesions.

Plasters are akin to liniments, but are solid, whereas the latter are fluid.

Cloths may be impregnated with liniments, and then applied over the important organs (liver, heart), if there is no contra-indication. Cloths impregnated with crude xylaloes are useful, for they impart an agreeable odour which helps the efficacy of the liniment.

19.— Douching or Spraying

1016. Douching [over the head, usually] is a method of treatment applicable when there is something to be dispersed from the head or other members. It is also applicable for the purpose of altering the temperamental state of a person, when that is necessary.

In applying the douche in cases where superfluities have not passed into organs or members, one first prepares it with hot water, and afterwards with cold water, in order to produce an astringent effect. If the state of affairs is otherwise, the cold application is used first.

Note that douching over the head may be done from a jug or similar vessel, or in the form of a spray or shower. The fluid may fall from a height, or close to the part. The part treated may be the head, or a limb, or other part. The fluid employed may be plain water, or medicated. If medicated, it may be mineral

or herbal. If mineral, artificial or natural.

20. — On Blood-Letting (Venesection).

The matter in this, the longest chapter in the whole volume, has been re-arranged and partly abridged.

1017. Blood-letting is a method of general evacuation. It removes the excessive quantity of humours present in the blood vessels.

1018. General indications. Blood-letting is only applicable (1) when the blood is so superabundant that a

disease is about to develop; (2) when disease is already present. The object in both cases is to remove the superabundant blood, to remove unhealthy blood, or both.

Cases coming under the first category are such as the following: incipient sciatica, podagra, or any arthritic disease

due to abnormal blood-state; danger of haemoptysis from rupture of a vessel in a rarefied lung, for superabundance of blood then makes the vessel liable to give way; persons on the verge of epilepsy, apoplectic seizure, melancholia with super-abundant blood, pharyngo tonsillitis, internal inflammatory masses, " hot " ophthalmia, persons with piles which generally bleed but now do not; women who fail to menstruate, but do not show the two colours indicative of a need of venesection, because they are so dusky, or pale, or greenish. Persons who suffer weakness from the hot temperament of the interior organs. (In these cases it is best to do the blood-letting in spring.)

Cases of severe blows and falls need bleeding for fear of an inflammatory mass developing (for there is a risk of causing the latter to burst before it has matured), provided there is no urgency and not too much blood in that part.

Remember, too, that blood-letting is safer when the maladies to be feared have not yet befallen the patient. It must be avoided in the initial stages of a disease because it renders the humours tenuous, and makes them become dispersed throughout the body and come to be admixed with healthy blood. Sometimes it happens that the venesection does not remove what was desired, and it would have to be repeated — which would be enfeebling. Once the maturation stage has been passed, the disease having passed its initial stage as well as acme, blood-letting is to be done unless there is some contra-indication.

Phlebotomy is necessary in the case of a person who sweats profusely from repletion.

1019. — Contra-indications. Age : Not before 14, or after 70. Young adults

should be gradually introduced to it by beginning with small blood-abstractions.

(2) Physique : those who are very emaciated ; those who are corpulent ; those who have flabby muscles ; those whose colour is white or yellow ; those who have often been ill. — An exception may be made in the case of adolescents and old persons, if they have firm muscles, full veins, have a red colour.

(3) Physiological states. — The following are contra-indications : (i.) a state of repletion with food ; the stomach full of food ; the bowels still loaded with fa;ces ; a state of nauseative satiety ; a state of sensitiveness of the pylorus, or weakness of the sphincter. Explanation : if the stomach is full, the effect of the venesection will be to draw imperfectlv digested matters into the veins to replace the loss from the vein. If the bowels are full, the veins of the intestines will suck in putrid matters from the fseces. In the former case one waits till the food has had time to pass on ; in the second case, the bowel is emptied by emollient enemas. In the case of nausea-tive satiety, one must wait till it passes off.— (ii.) A state of fasting. When the pylorus is relaxed and the bile runs into the stomach, producing gastric pain, per-sistent nausea, vomiting, and a bitter taste in the mouth (for by these signs you know of the condition), beware of letting blood in the fasting state, (iii.) Tenderness of the pylorus. — One knows that this tenderness is present, because pain is felt during the passage of acrid substances through it. — (iv.) Pregnancy. — Avoid letting blood from a pregnant woman unless there is grave necessity, such as the need for arresting haemoptysis, and even then not unless the strength is sufficient, (v.) Miscellaneous. — A resolvent bath should not have been taken shortly before. Coitus should not precede. A cold temperament is a contra-indication. Caution is requisite in the case of persons living in cold countries.

(4) Pathological conditions, (i.) Humoral. It is not necessary to let blood every time you find the signs of plethora which we have given, or rather where there are signs of repletion with immatured humours. In such a case venesection would be very disadvantageous, because blood-letting would incur the risk of therl not maturing, with consequent risk to the life of the patient

It is a good practice to let the. blood of a patient with excess of atrabilious humour, and to foUow t up with a purge. But you must carefully watch the colour to judge of the patient s condition, and also the tension, because it is from the state

So^ZZ^lT^^l^ ° ne CanbSSt jUd S 6 of when to employ venesection <
So if a person s blood is good and scanty, and his body contains many bad humours venesection would extract the good blood and leave the bad humours beS'
if tne amount of bad blood were scanty and something passed down into a member which markedly interferes with the downward passage of the bad blood TX it and it became necessary to do a blood-letting, one should only take a little, and give the patient good food, repeating the blood-letting after a few days. It will then be possible to abstract the bad blood and leave the good behind

_ If the blood contain unhealthy bilious humours, the proper thing to do first

rest and r !narti?it a teim ° US laxative > or use an emetic, or give sedatives and order

If the humours are gross, the ancients advised the patient to take a bath and pursue his ordinary occupation. Both before and after venesection, and before any other form of depletion is undertaken, he was to take drinks of an attenuant syrupus acetosus, m which hyssop and thyme had been boiled. If done unnecessarily ton-ue ete 7 & Y ^ biU0US hum0ur in motion,— shown by dryness of the

(11.) Colic (iii.) When the disease is on the move, neither venesection nor purgation is to be done, because that is the time when rest is to be ordered and sleep

is to be aimed at ; it is the time when the malady will bestir itself, (iv.) Febrile states.— is ote that blood-letting may be quite unnecessary in fevers. If there is not much matter the "nature" will overcome it unaided. One ascertains whether this « likely by studying the aspect of the patient, his age, his strength and the like.— When the fever is high, or when there is inflammation, blood-letting is avoided. Also if there is a severe rigor ; and if there is spasm or if there are convulsions. In all such cases, bleeding would deplete the treasury of blood with resultant weakness. Moreover, if a febrile person, with headache, suddenly develops a diarrhoea, phlebotomy, though likely to benefit up till then, has become superfluous. (See also 1029.)

(v.) Critical period of an illness.— When the crisis has been reached and it is l on S oration, one must in no wise remove much blood. If possible procure T fll u, } f n0t P 0SSlble - a sma11 blood-letting may be done, reserving the treasury oi the blood for a subsequent venesection if such prove to be necessary and also conserving the patient's strength for undergoing the critical stage. If a W time has elapsed since the blood-letting was done, and if there be a complaint during the winter season oi a feeling as if one is broken in pieces, one would just do a blood-letting without touching the mam bulk of the blood for the present

(vi.) Enfeebled strength.— If the strength is enfeebled by having much recourse to blood-letting, it will result in the formation of many humours

1020. The proper time of day for venesection. —There are two occasions when venesection may be done ; there is the time of election, and there is the time ot necessity The time of election is before mid-day, after digestion is completed and when the bowels are empty. In the other case, the need for the relief of vene-section is too urgent to wait for the other favourable conditions. (Davs of election • as with evacuants generally ; q.v.— and " southern " days.)

1021. Vessels which may be used for blood-letting.

Both arteries and veins may be used for blood-letting. But arteries are avoided because of the risk of not being able to staunch the blood, and if a small no e be made an aneurism may result. When there does not appear to be this risk the use of an artery gives better results in some diseases, unless they are situated in the vicinity of the artery to be tapped, for that would make the blood thin and not. _ the artery to be selected must be near the diseased part [in the case of chrome conditions, m the opposite region in acute cases (Aeg.)].

1022. The veins of the upper extremity.

, . . Six ° f these are made use of : the cephalic, the median, the basilic, the funus brachn the vein between the middle and ring finger and that between th.e thumb and index finger. The cephalic is much the best to use. The Parts drained bv these various vessels are as follows : The cephalic vein drains from the neck and parts above that, but very little from the parts below, and none from the liver and hypo-

chondrium or from the lower limbs. The basilic vein draws blood from the abdomen and parts below The median vein draws blood from regions intermediate between those drained by the cephalic and basilic. The funis brachii drains the same parts as does the cephalic. The vein between the right middle and ring finger is used for conditions of the liver. The left one is used for disorders of the spleen. The blood from these veins readily clots, so the patient should put his hand into hot water to keep the blood flowing longer, and to help it to emerge better if inclined to come out too scantily. (The incision in these two veins should be longitudinal.)

The vein between the thumb and index finger, on the right side is used tor

similar purposes as the. basilic. It is useful in cases of chronic hepatic pain, and very efficient in disorders of the diaphragm (as Galen perceived).

An artery may be used which goes to the inner part of the palm, and is nearly as effective.

1023. The veins of the head.

(1) The frontal veins. These are between the two eyebrows. Phlebotomy in this situation benefits heaviness of the head, especially occipital heaviness ; heaviness of the eyes ; long-standing headache.

To make these veins swell, apply fomentations, and also a bandage round the neck placing a finger over the windpipe to prevent suffocation. (Aeg.) _

(ii) The supraoccipital veins. Bleeding here is beneficial for megrim, and ulcers of the scalp.

(iii) The temporal veins, which are tortuous.

(iv) The two veins at the lachrymal angle of the eyes. _ These can only be rendered visible by compression of the neck in partial suffocation.

Use : in headache, migraine, chronic ophthalmia, pannus, trachoma,

6P Precaution : do not cut deeply lest a fistula be set up, by striking the bone. Moreover in such an event very little blood will emerge.

(v) Three small post-auricular veins, found at the point which the tip of the ear touches when pressed back against the hair. One of the three is more conspicu- ous than the others, and this is opened in cases of glaucoma, ulcers of the ears, neck and back of the head. . .

(vi) The veins behind the ears below the nuchal protruberance. Ihis is beneficial for chronic eye diseases due to thin blood, and for chronic headache. _

(vii) The vein at the tip of the nose. It may be made obvious by pressing the finger upon the tip of the nose so as to make it groove into two. Very little blood will come from it. (Aeg. advises the inside of the nostrils to be rubbed with the end of a speculum, or to be tickled with a rough substance.)

Use : for freckles, for dimness of vision, pimples in the nostrils, itching ot the nostrils ; for piles. ,

Ill-effect : a permanent serpiginous redness of the tip of the nose may result, which spreads out over and disfigures the face, so that the remedy is worse than the

(viii) Labial veins. There are four. Use of phlebotomy here : for ulcers of the gums ; aphtha? ; (septic) gingivitis, flabby gums, ulcers, fissures and fistulas in the gums. . ... ,

(ix) Sublingual vein. This is used in cases of angina, and tonsillar abscess. Supra-- and sub-lingual veins are used in cases of heaviness of the tongue due to congestion. The incision must be lengthwise as otherwise it is difficult to staunch

the blood. . , . , ,. , ,

(x) A vein at the lowest part of the lip. This is opened m order to relieve let or of the mouth. It is situate between the chin and lower lip.

(xi) Veins of the gums : these are opened when wishing to act on the mouth of the stomach. .

(xii) The jugular veins. The instrument to use here is one with a sharp point. Technique : draw the head to the opposite side until the vein is stretched like a cord. Consider in which direction the vein is likely to slip, and then make the opening accordingly. The incision must be transverse. (Aegineta says : use the concave part of the scalpel.) ■ „■,,» +1

Use : at the onset of lepra ; in severe angina ; m dyspnoea, m hot asthma, in hoarseness ; in abscess of the lung ; in dyspnoea due to superabundance of "hot" blood; in diseases of the spleen and side.

1024. The arteries of the head.

The following may be opened, (a) The temporal arteries. These are sometimes phlebotomized, sometimes incised, sometimes drawn out, sometimes cauterized. The object is to influence watery matters in glaucoma. (6) The two post-auricular

arteries. This is for treating some forms of ophthalmia, incipient glaucoma, pannus; dimness of vision and long-standing headache.

There is always the risk that coagulation will be very slow.

1025. The veins of the trunk. -

There are two to be found coursing over the abdomen. One runs over the hepatic region, and the other over the splenic. The former is opened in cases of dropsy, the latter in diseases of the spleen.

1026. Bleeding from vessels in the lower limbs.

(i) The. sciatic vein. This vein is opened in the region of the malleolus. The bandage is applied above, - anywhere between the prominence of the hip and the instep. It will have to be applied tightly. The limb should be bathed in hot water first. The incision must be longitudinal.

Contingencies. — A deep artery, or one difficult to find : in this case use one of the branches, such as that which runs between the little and second toe.
Value. — In cases' of sciatica, podagra, varices, and elephantiasis.
Repetition. — It is difficult to do a second phlebotomy.
_ (ii) The saphenous vein. This is opened 'over the internal malleolus, above the instep. It is more conspicuous than is the preceding. The incision must be transverse.

Value. — For emptying the blood from the organs below the liver, and for causing the blood to descend from upper parts to lower ones. It is a powerful aid for the menstrual flow. It opens up the pores of piles. While one would expect either vessel to be equally efficacious, experience actually shows that the use of the sciatic vessel is more beneficial for sciatic pain.

(iii) The popliteal vein. This is opened behind the bend of the knee. It is as effective as opening the saphenous vein. For exciting the menstrual flow, however it is even more efficient, as well as for pain from piles, and pain in the anus.

(iv) The vein over the heel. The use of this is similar to that of the saphenous of which it is a branch.

(v) The vein over the inner toe : this may be used in cases of sciatica and uterine disease. (Aeg.)

In brief, the veins of the lower extremity are used in cases where matters descend from the head, and for disorders connected with the atrabilious humour. Phlebotomy from the feet is more weakening than that from the arms.
1027. Procedure in blood-letting, (a) Pre-operative treatment. The stomach requires to be previously fortified, as there is a risk of death otherwise. If the stomach is weak and sensitive, give pieces of bread soaked in a rob made with a vinegar of good odour. If the person is also of cold temperament the bread should be dipped in sugar water with aromatics, or a syrup of spearmint perfumed with musk. If bile is regurgitating into the stomach, induce vomiting with plenty of hot water containing oxymel. Then give the soaked bread, and do not delay with the operation. — It is disadvantageous to take a bath prior to the blood-letting, because it makes the skin thick and soft, and the operation is difficult unless the blood is thick.

(b) Instrumentarium.

I. Several scalpels.

II. A ball of silk or thread.

III. An instrument to excite vomiting, made with a feather or of wood.

IV. Rabbit-hair.

V. A medicament of aloes and frankincense and a musk electuary.

VI. Lozenges of musk.

Some with broad point, others with narrow.* The latter are best for mobile veins like the jugulars. See that the point is intact, lest you miss the vein or cause pain, or do injuries which lead to sepsis.

Used if vomiting is not spontaneous.

Used as styptic in arterial hemorrhage.
Used to keep the preceding in place.

Also for syncope.
For syncope ; musk is given to smell for

the same purpose.

* The. tip should be long enough to reach the vein without touching other structures.

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(c) Make the veins stand out. A band is tied round the limb for this purpose
The artery may swell also, in which case the tourniquet should be loosened, and
Jhe swollen yeTsel rubbed.' If the swelling ^Pf™ Z^^LttLt^l
that vessel and turn to the vessel running over the elbow On the other nana, a
bandlgfmay obliterate the arterial pulse and lead to a risk of opening this m mistake
foTthe vdn If the vein remains difficult to see, relax and tighten the band alter-
nately Ind rub the vein down and up; up and down, using two fingers for this,
fe then ?hestatioLry finger feels the blood run in which the other finger forces
down wTtn very Xn y vein S s this will need repeating several times. The , band must
be Idapted according to the coarseness of the skm, the amount of fat and size of the
mufclef If X band conceals the visible part of the vein, a mark should be made

alono- the line of the vessel, to enable it to be found afterwards.

alongthehne of the v ss ^ ^ ^ ^^ ^ d ddl

fineer so as to leave the index finger free to feel the place to mcise. Grasp the
We bv the middle and not by its end, so as to have proper control of the blade.
The poLt should be so sharj that it will enter the vein by a gentle coaxing
To hEve to keep on poking the knife about to find the vein will only do injury. The
JlaSLuld have be P en dipped in oil, and the area of skin should have had oil gently
rubbed mto^t. s _ on .^ ^ ^ ^^ , longit udmal, tc .render f dotting -to*
liVplv The" opening should be well above the level of the joint. If made at the
level! theMooHi not come out freely, and the risk of mmrmg the nerves and
arteries is^great ries to the vein opened . Since the venesection

has to be repeated on s?me future occasion, the vessel must not be unduly injured
J^SJd^tetog is likely to injure it ; hence a second <^»>g^g**£
aAnother spot, thul averting risk of inflaming of the part^ (11) In P» es ^ °^
structures When using the median vein, the nerve is m danger, there maj De
So nerves irfthe way Hence one should cut downwards and lengthways The
^rv^mlv he over the vein, tense like a string, and injury to this, thinking it is the

mhSrek" th^ li^T^tsoioVZle days, and eVen then be very cautious

death from hemorrhage will -^^S ^^Sffit^S
K^^^^bS^^^^t^ veins may bleed alarmingly

freely (v) Inability to find the vein. Do not keep on xn^attempts to puncture
the vein, especiafly if the hand As being ^used ^pe^a tnal at ^-i^el,

it S^tiy -side. _ Some ma . ntain ^^ the operat . on is legs inful a the parts
are made numb with a tight bandage for about an hour previously.

(f) Amount of blood to be removed.— There is a proper time
for arresting the flow in various cases. Some persons even though
febrile, caAear losing five or six pounds of blood, whereas others
cannot stand losing even one pound, though apparently m health

One must consider three points, (*) An impetuous exit of

blood or a sluggish flow, (b) The colour of the blood. It is permissible to go on drawing blood as long as it is black and thick. But if it turns pale and is thin, its flow must be quickly arrested, lest dangerous results ensue. It may be pale and watery at first, so that one might think one should stop the operation, even though one knows there are signs of plethora. For the colour of the blood does not always correspond to what would be expected in cases of plethora. The colour of the blood is also misleading when there is an inflammatory mass from which the blood is coming. (V) The state of the pulse. If the flow of blood fails, and the colour alters, and the pulse becomes weak, stop the bleeding. Also, if yawning and stretching, hiccough, or nausea come on. Watch the pulse if the colour changes quickly and the flow is free, so as to be on guard against syncope. (See below).

A limited venesection is a great conserver of the strength and yet it entails the flow of tenuous and sometimes clear blood, with retention of the thick and opaque blood. Liberal venesection is very liable to cause syncope, but is more cleansing ; it clots more slowly, but is more efficient in those cases in which it is done prophylactically, and in obese persons. It is better to do a liberal venesection in winter, as the blood does not clot ; it is better to do a limited one in summer, if it is needed then at all.

When the blood-letting is done to stop haemorrhage by drawing blood away from the site of bleeding (e.g., epistaxis, uterine haemorrhage, haemoptysis) draw only a small amount, and employ several sittings rather than one single one, unless the case is very desperate. (Repeated small bleedings would certainly tend to produce an auto-haemostatic effect, as we now know).

(g) Syncope. — Syncope rarely occurs during the flow of blood, unless a great amount is lost. One only bleeds up to syncope in cases of synochal fevers, in incipient apoplexy, in extensive angina or inflammatory swellings, or in cases of severe pain. Even in such cases one would make sure the strength of the patient is adequate.

The persons liable to faint as a result of blood-letting are those of hot temperament, and with lean and flabby bodies. Those with equable temperament, and with firm flesh, are not likely to faint unless a large amount of blood is withdrawn. Watch the pulse.

The first blood-letting may be accompanied by syncope if it is carried out quickly on a person not accustomed to it ; therefore emesis should first be procured to guard against that, and it may be repeated at the time of the blood-letting.

(h) After-treatment. — (i.) Washing the part. — When washing the part the skin must be deflected by means of one's finger, so that the site of puncture is no longer over the aperture in the vein. Then wash ; dry carefully ; apply a compress. Then allow the skin to return 'to its natural position. (ii.) Diet. The loss of blood is replaced by grilled meat, with its gravy, or by giving forced-meat balls. Allow only small quantities, for the stomach will not be able to digest much. Light food should be given first, and the full dietary only resumed gradually, (iii.) Other points. The patient should lie supine. A resolvent bath must not be taken. Exercise must be avoided, (iv.) Suppuration of the wound. The wound may become inflamed. Apply a plaster of ceruse, and dress with cold,

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have to be used if vene-

wet infrigidants. . The other arm would
section has to be repeated subsequently.

1028. Repetition of venesection. — (i) Indications : the operation may be re-peated often if the humours are much in excess, for the operation sets them in motion (" causes them to boil "). But if the blood be rich in atrabilious humour, the blood-letting should be infrequent. Though soothing at the time, it results in undesirable disorders, including apoplexy, especially in old persons, (ii) Proper time-interval before repeating the blood-letting. This depends on the degree of weakness If there be no weakness,' it may be repeated within an hour, m which case the blood is prevented from clotting by applying bread soaked in oil with a little salt over the wound, and keeping it in place with a bandage. If much -blood has to be taken, wait a day. Two or three days is the limit for re-opening the wound, (m) Technical details regarding the re-opening. Another vein may have to be used, especially if the hand was used previously. The same place must not be used if a palsy was accidentally produced previously. Some force may be needed to get into the vein next time. [A special hammer appears to have been used, instead of using steady pressure. (Albucasis.)] If the second blood-letting was to be done within an hour, or during the same day, the first incision should have been transverse ; but if a day or more elapse, a longitudinal cut is best. The movements of the fingers will keep such an opening patent. The scalpel should be narrow, (iv) Treatment be-tween the operations.— Sleep hastens clotting, and prevents the superfluities from getting into the blood, because they pass into the interior parts of the body during sleep Sleeping on the side from which the blood-letting was done tends to damage the tissues.— The strength of the patient must be maintained proportionately to the amount of blood evacuated.— The bowels must be kept clear. _

1029. — Precautions regarding blood-letting in fevers, (i) Indications, when the fever is septic, -"i." the inflammation is not great, the ten rules already given are to be followed. Not j the urine. If the urine turns thick and reddish, and if the pulse is large, ant- che face swells, and the fever does not quickly improve, blood-letting may be done, and it should be on a fasting stomach. But if the urine becomes thin and " fiery," and if the face wastes from the outset of the illness, avoid blood-letting.— Blood-letting may be done during an apyrexial period.— When the fever does not arise from putrefaction, bleeding without depleting the treasury of blood will resolve it. But bleeding may kindle up a fever, (ii) When to operate.— If the indications are present, take no notice of those who assert it should not be done after the fourth day of the illness. It may be done any day, even after forty days, avoiding only the moment of a fever paroxysm. Otherwise follow the ten rules already referred to. (iii) Ouantity to remove. Do not remove much blood at first in hsemorrhagic fevers, and take plenty at the stage of maturation, for this itself will often put a stop to the fever. — Stop the flow if you find the blood is pale and watery. Phlebotomy often disperses fevers, and resolves putrefaction.— When the febrile person is enfeebled, one should divide up the venesection. — Note that as venesection draws contrarily, it has a constipating effect.

21. — The Operation of Cupping

1030. The operation of cupping
cleanses the particular part of the skin
more effectively than does venesection.
It withdraws the rarefied rather than the

more viscid blood. It is not much use
for persons with bulky coarse bodies, with
thick blood, for it does not withdraw
any blood from them, even that component which it is de-
sirable to withdraw. It only removes such (matters) as are
extremely tenuous — and even these only with difficulty. It also
produces weakness in the member to which the glasses have
been applied.

1031. The proper time for using cupping-glasses. — Some
authorities advise against applying cupping-glasses at the
beginning of the lunar month, because the humours are then not
yet on the move or in a state of agitation ; also against applying
them at the end of the (lunar) month, because at that period (of
the cycle) the humours are less plentiful. The proper time
(according to them) is the middle of the month (when the humours
are in a state of agitation) and during. time when the moonlight
is increasing (when the humours are on the increase also).
During that period the brain is increasing in size within the
skull, and the river-water is rising in tidal rivers.

The time of day proper for using cupping-glasses. — The second
and third hours are best. One must take care not to apply
cupping-glasses after the bath, except in the case of the blood
being thick.- If so, the bath is taken first ; then wait an hour ;
then apply the cupping-glasses.

1032. Points of application. — (a) Forehead : most people
have a horror of applying cupping-glasses here, as they believe
that the senses and intellect 1 will suffer thereby.

Point of Application.	Equivalent in regard to venesection.
(6) Nape of neck 2	
(c) Between the shoulder-blades 3	
(d) Over the two posterior neck veins '	

From median
vein.

From basilic vein.

From cephalic vein.

Uses.

Heaviness of eyelids (relieves the lids),
itch of eyes, fetor of the mouth.

Pains in upper arms and throat ;
to relax the cardiac orifice of the
stomach.

(e) The legs

[}) Under the chin.

(g) Over the loins.

(h) In front of thigh.
(i) Behind hips.

(j) In popliteal space.

{k) Over malleoli.

(/) Over loose tissues of
outer side of hip.

(m) Over the buttocks,
towards the anus.

Almost equivalent
to blood-letting.

Tremor of head ; and for the com-
ponents of the head (face, teeth,
molars, ears, eyes, throat, nose).

Cleanses the blood; provokes men-
strual flow 5 .

Teeth, countenance, throat :
head and jaws.

cleanses

Inflammatory masses in upper part
of thigh, — scabies there ; pustules ;
podagra; piles; elephantiasis; blad-
der ; uterus ; pruritus of back
[renal cong estion] .

Orchitis ; leg ulcers. '

Inflamm. conditions
buttocks.

and ulcers of

Aneurysm ; long-standing abscesses
septic ulcer of leg and foot.

Retained menses ; sciatica ; podagra.

Sciatica, podagra ; piles ; inguinal
hernia ; the structures within the
hip joints.

Draws humours from whole body,

from head ; benefits the intestines ;
cures decomposition of menses, and
thereby alleviates the whole body.

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Notes. ■

i. Muhamad says that if placed over the hollow of the

occiput they induce loss of memory (Mgn.).

i. There is a danger of transmitting forgetfulness, for as some say, the posterior part of the brain has to do _ with the preservation of memory, and the cupping enfeebles this faculty, and the offspring will suffer. Some say that cupping over the occiput and top of the head is beneficial for insanity, vertigo, and for preventing the hair from going grey. But we must take it that this effect on the hair applies only to feeble-minded people and not to other types of person, for in most cases the use of cupping in this situation brings premature greyness, and also dulls the intellect. But it is beneficial for eye-diseases, and indeed this is its chief value, namely for pustular keratitis and staphyloma. " But cupping in this situation is harmful for cataract, unless the proper moment is chosen. It impairs the activity of the intellect, making the offspring dull and forgetful, with poor reasoning powers, and permanent infirmity.

3. Glasses applied over the scapulae as well as between them are beneficial for hsemorrhagic diseases of the chest, and sanguineous asthma, but are-enfeebling for the stomach and set

up palpitation. .

4. To prevent tremor of the head occurring, we move the glasses downwards and then upwards again to over the scapula, unless the cupping is being done for haemoptysis, m which case one must move them down but not upwards again.

5. In the case of pale flabby women with watery blood, cupping of the legs is more advantageous than a venesection from the saphenous vein.

Note that the use of movable cupping-glasses over an area and their use for joint diseases is still practised under the name of Bier s treatment.

When the cupping is done with heat, whether with or without scarification, it is more efficient. But cupping with scarification is more efficient, especially in cases of flatulence (of various kinds) Cupping without scarification is more applicable for cold swellings, and whenever the cups are to be moved about over various places.

8260 The distinction between wet and dry cupping is not very evident. Tr, the mediaiS drawings referred to below, the use of scanners with the cupping seems "uTual It wdl be clear that the action of the two measures is quite different, drv cuPPiS leading to the formation of autohaemolysins, the wet cupping being Se of thlnature of a " mild evacuation," a less drastic procedure than bleeding ftom a vein-perhaps largely because the victim did not see the blood and because the quantify of blood withdrawn was necessarily hmited m amount.

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1033. Some of the fur-poses in view in cupping. — (i) to move materials away from one part to another. Thus menstrual flow will be arrested if the cupping is done over the breasts.

(ii) To draw an inflammatory process from deep parts towards the surface and so render it accessible to some medica-ment.

(iii) To divert ah inflammatory process to a neighbouring and less important organ.

(iv) To render a member warm, and draw blood into it, and disperse vapours from it.

(v) To restore a member to its proper position (e.g., inguinal hernia).

(vi) To allay pain. Applied over the umbilicus they relieve violent colic and flatulent distension of the abdomen, and the uterine pain" due to movement of the menstrual fluid, especially in young women [e.g., dysmenorrhcea].

1034. There are three points to note in regard to wet cupping — {a) the evacuation from the member itself ; (b) the safeguarding of the basis of the life-breath, so that the latter shall not leave the body with the humour which is being evacuated ; (c) the evacuation must not be made from a vital organ.

In wet cupping, the scarification must be deep to ensure drawing the humours from the deep parts.

Such cupping must not be done over the breasts themselves, for fear menstrual flow and epistaxis should be set up.

If the region to be cupped is covered with ointment one should not delay the scarification. The first point of application should be made light and the cup removed quickly. As the part is accustomed to the cups, they may be left longer.

The site of the cup may afterwards develop inflammation, and thus render it difficult of removal. To avoid this a cloth or sponge soaked in tepid or nearly hot water should be used as a fomentation round it.

Cupping of the upper parts of the body ensures that morbid materials will not pass down into the lower parts of the body.

1035. Age. — One should not begin to apply cupping to infants until they are in their third year; cupping should be quite unnecessary in the first year of life. It is altogether contra-indicated after the sixtieth year.

1036. After-treatment in regard to food. — In ordinary persons, a meal may be taken an hour after the cupping has been completed.

Persons of bilious type should be given the following foods

after being cupped: pomegranate juice with the seeds; endive juice with sugar ; lettuce and vinegar.

$ ->6i During the Middle Ages, in Europe, cupping was practised as part of the" ritual of the bath-house. The subject is very fully dealt with by Alfred Martin (Jena 1906), who presents numerous illustrations from contemporary literature Though the practice has disappeared from our customs, it has done so only comparatively recently, and may be still practised among other peoples. The necessity for several attendants during the course of the ritual determines its restriction to public institutions, only the. very wealthy having their own suite for their own families. Both sexes were employed in the service, which included most of the operations now confined to the barber ; women were chiefly employed for fetching and carrying, men for seeing to the heating apparatus.^ But the service of cupping and venesection was confined to men, generally the bath-men, who specialized in the work. „, ,,

The rules found in the Canon appear to have been conformed to. inus, tne association of cupping with bathing is found in the pictures representing the bather in the hot room or calefactorium, sitting on a special bench, with his feet m a hot bath reaching to the knees, " to make the blood watery," whilst the bath-man is engaged in applying the cupping glasses (or horns).

The practice of cupping in the ordinary routine of life was an expiession of the universal desire for ensuring prophylaxis against disease. Concurrently it was applied for the treatment of declared disease, and this use survived the other. Even in these days it is occasionally employed with advantage, and the method is deserving of much more attention both by students and practitioners.

§ 262. It is easy to see how and why the subject has fallen into discredit and then disuse, when we combine the study of habits and customs with one of the generally changed outlook produced by modern education. The conclusion, however, that the subject-matter of this section of the Canon was inherently erroneous or superfluous must be avoided. Thoughts run along parallel lines with practice, habits, public opinion. To us, who live to see all these lines at once, it appears as if one were integrally related to the other. But even now we may not realize that we are only viewing one small field of a whole panorama. It is necessary to look forwards also, for then it becomes clear that theories, ideas, modes of practice, all really run along their own lines, each justifi-able in itself ; the people of one age seeking to hold all the lines together and by force making them into a unity which they cannot possess. So it may be said that the instruction of the Canon _ in regard to these various modes of treatment was sound, and remains sound, but the days of their usage have gone.

22. — About Leeches

1037. The Indians have specified which leeches are venomous. One should beware of using those with large heads of antimonial and black colour, or green colour ; those with down on them, like eels (snakefish), and those upon which are fine streaks of bright colour, or chameleon-like in colour. ^ All these are poisonous, and would give rise to inflammations, hemorrhage, fever, syncope, paresis of the limbs, and intractable ulcers.

One should not employ leeches taken from unhealthy water or those whose excrement is black and muddy, and whose movement immediately darkens water, and renders it offensive in smell. Take leeches from water whose surface is covered over with duckweed and in which frogs live. Pay no attention to those who- make out that leeches are bad to use if they come from water in which frogs live.

The colour should be greenish (like duckweed), and there should be two longitudinal lines having the colour of orpiment and ruddy; they should be rounded and liver-coloured. One may accept leeches which look like little locusts, or like mouse-tails, with very small heads. But do not accept those with red bellies and green backs, especially if they were collected from running waters.

(Aeg. gives : there are six rust-coloured lines on the back, varying from blackish to greyish green ; the under parts are either yellowish-green with black spots and edging, or brownish- orange without spots, but two lateral black stripes).

A leech is ill if the mouth is soft, if it is covered with dirty slime, if there is a skin near it as it swims about in the water, and if it lies coiled up in tepid or in fresh water. (Aeg.)

1038. The blood which leeches remove from the body comes from deeper down than that obtained by wet cupping.

1039. Procedure of application. — Leeches should be kept a day before applying them, and they should be squeezed [or have their heads bent down. Aeg.] to make them eject the contents of their stomachs. If feasible, they should be given a little lamb's blood by way of nourishment. The slime and debris from their bodies should be cleansed off, say, with a sponge.

1040. Site of application. — The place where the leeches are to be applied must be [shaved if necessary : Aeg., and] well laved with nitre-water and rubbed till red. Dry carefully. Dip the leeches in fresh tepid water [a few drops of white wine being added if they are sluggish. Aeg.], cleanse and apply, [with one's freshly-washed hand, or with a soft towel, or in a test-tube called a " leech-glass " — especially if the place in question is the palate or gums]. The point of application may be smeared with clay (or moistened with sugar-water or milk) or scratched with a needle till blood appears, in order to coax them to take hold,

§ 263. The leech must not be let go until it has taken proper hold, as one can tell by the sinuous movements of the neck and from the circumstance that the head forms a right angle to the body.

To ensure that they will not crawl into the gullet, or nose, or

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anus, one must draw a thread through the tail end from above

down not from side to side, otherwise one would injure the large

blood vessels of the 'animal.

Place chosen for the application.— One must not apply leeches to unhealthy skin, or to places where there are subjacent large vessels, or where the skin is very thick (palm of hand ; heel), or in a situation where healing would subsequently be interfered with because of pus or septic matter flowing over it from near by.

1041. Removal. — When the leeches are full, and you wish to let them come off*, sprinkle a little salt over them, or [pepper, or snuff], or ashes or nitre, or burnt bristles, or flax, or burnt sponge or burnt wool. They will then fall off.

Do, not detach leeches forcibly, or else there may be violent

haemorrhage. . '

1042. After-treatment. — After the leeches have fallen off, the place should be sucked by cupping it, in order to extract some of the blood at the spot and thereby get rid of the toxic substances left in the wound. [If one wishes to keep the blood flowing anyway, one applies warm, dry cloths to the part, or a warm poultice, or a sponge soaked in warm water. After the bleeding has stopped, apply a soft, dry compress]. _

If the blood will not stop flowing, dust the spot with finely powdered burnt galls, quicklime, ashes, ground-up earthenware and similar styptics.

§ 264. [Al um, cobwebs, pitch, gunpowder, hydrates, sesquioxide of iron, or pressing the skin into the folds have been advocated. The cautery has been necessary as a last resource. All such remedies should be at hand.

Do not leave the patient till the bleeding has quite stopped, and if it is a child, watch it the following night as well.

If a leech should have got loose and been swallowed, give salt-water to drink, copiously. If a leech has wandered into the anus, give a salt-water enema.

Do not use leeches again if they have been applied to a case of typhoid fever, cholera, smallpox, or syphilis.]

1043. The use of leeches is beneficial in _ subcutaneous

maladies like serpiginous ulcers, morphew, impetiginous ulcers, and the like.

Annotation by Costaeus : Leeches are very effective also for pleurisy and for opening the hsemorrhoidal veins.

* One may wish to detach them before they are fall, because the patient is fainting or develops cramps.

23. — The Retention of Substances due to be Discharged.

1044. Substances which are due to be discharged may be retained within the body for the following reasons : (1) the material may be withdrawn from the part, but not from the body itself ; (ii) the material may be retained, although an evacuation or discharge is actually taking place at the same time, (iii) The retention of these substances itself aids evacuation. The substances here meant are infrigidants, styptics, glutinous medicines, caustics, (iv.) stricture.

(i) Materials are retained because attracted to a certain place, and no (outward) evacuation occurs. Ex. the application of cupping to the breasts,— this relieves uterine haemorrhage. The action is more decided if the pain in the (diseased) part is first relieved.

(ii) The retention of substances although an evacuation is taking place. For instance, venesection from the basilic vein may serve to arrest emesis in a case of purgation; or purgation in a case of emesis. Or again, cessation of both discharges if the sweat is (strongly) provoked at the same time.

(iii) The retention of material helps evacuation in the case where one cleanses the stomach and intestines from glutinous unhealthy humours by giving lubricant laxatives, using picra; or where one procures a thorough cleansing of the cardiac orifice of the stomach by emesis, for cutting up of the material which remains behind in the stomach.

Styptic medicines aggregate abnormal matter, and contract up the lumen of the passages.

Infrigidant medicines clot the material, and cause the orifices to tighten up and become narrow.

Glutinous medicines choke up the orifices of the channels (of the body), and if they are desiccant as well, and sharp (or hot), this action will be still more decided.

Caustics produce an eschar or scab, which stays on the orifices of the passages, and becomes hard and closes them. But the obstruction may be harmful. The scab may get loose or break, and the underlying aperture would thereby become enlarged. Some caustics have a styptic action (e.g., copper sulphate) and some have not such an action (quicklime). The styptic caustics are required when one wants a firm scab ; the others are used when one wishes the scab to come off before long.

(iv.) Retention of material by stricture. — There are tw T o

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varieties. In one the foramen is closed and contracted, so that the adjacent parts are fused together. This happens for instance when the artery is opened in mistake for the basilic vein in doing venesection. The other is where the outlet of a wound is blocked, and the channel itself is blocked, as when we insert rabbit hairs into a wound.

We may say, in brief, that if blood is flowing out because the orifices of the veins are open, we must use styptics to tighten them up ; but if it is flowing because of rupture of the vessel, glutinous styptics must be used, like Lemnian earth ; and if it is due to ulceration (erosion), one must incite the development of granulations by adding something which will cleanse away the corrosive substance.

24. — The Treatment of Obstructions.

1045, Obstructions are due to the humours being thick, or viscid, or over-abundant. ....

If the humours are simply over-abundant, their injurious effect is removed by evacuating them either by venesection or by purgation. If the humours are thick, they must be rendered thin. If they are viscid, and tenuous, incisives are required.

You have now learnt the difference between a thick or coarse and a glutinous quality ; it is the difference between melted glue and clay. Thick or coarse humour requires attenuation by a resolvent to make its expulsion easy ; viscid or glutinous humour requires an incisive which is able (a) to cut its way between the fluid and that to which it adheres [the wall of the passage], thus parting one from the other, and (b) to break the fluid into small fragments, — because glutinous matter obstructs both by adhesion to its surroundings and by the cohesion of its particles.

I046o In resolving thick humour there are two opposite conditions to guard against. On the one hand, if the resolution is not sufficient it will render the material watery and at the same time increase its volume so much that it cannot be resolved at all, thereby making the obstruction greater still. On the other hand, the resolution may be carried too far, in which case the attenuated portion will dissipate altogether, leaving the sediment behind as a calcareous mass.

Therefore, when vigorous resolution is necessary, one helps the action by the use of lenificant tenuous matter free of coarse particles, and moderately " hot,'' for this will assist in removing the whole of its obstructive action.

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Obstructions in the veins are worse than others. Ob-

structions in the arteries are still worse. Obstructions in the vital organs are the worst of all.

Therefore it is better to combine astringency and attenuation in an aperient, because the former will counteract the damage which attenuant substance does to the member.

25 — .The Treatment of Inflammatory Swellings.

^1047. As has been explained, some inflammatory swellings are " hot," some are cold and soft, and some are cold and hard. Their causes are either immediate or remote. Plethora is a remote cause ; blows, falls and bites are immediate causes. Some of these causes may befall a body which is in a state of plethora, or one in which the humours are in balanced proportion.

1048. Inflammatory swellings due to remote causes or to immediate causes associated with plethora occur either in organs which are adjuncts to vital organs (namely, emunctory organs) or not. If they are not present in such organs, one must not at first apply any of the resolvent agents, but simply relieve the (special) emunctory organ concerned, if there is one. If the particular vital organ has not its own emunctory the whole body requires attention with a view to influencing the affected part by recoil [i.e., using a " repercussive "], drawing the material to a different organ, and also introducing an astringent influence. Owing to a difference in the member, an attraction may occur for something placed in the opposite side, whether by using some appropriate exercise, or by applying something heavy over the part. Thus, inflammatory matter may often be drawn away from the hand by keeping something heavy over the place for an hour.

1049. For acute inflammatory swellings, astringent repercussives must be purely cold in temperament. But if the swelling is " cold," the remedies must be combined with something possessing a heating property in addition to being astringent, such as bogrush, and azfarut-tlb [a medicament derived, according to some, from a certain species of oyster, Indian Ocean].

During the stage of maturation of the inflammation., the retentive quality of the treatment must be kept down, and it must be combined with something resolvent. When the height has been reached, the two classes of remedy may be given in equal proportions. Then, during the stage of declination, the remedy should be simply resolvent and relaxing. Cold relaxing remedies have a more desiccant effect than hot ones.

1050. Inflammatory swellings produced by immediate causes in a person who is not plethoric require an initial treatment with relaxant and resolvent remedies, otherwise the treatment is as

before.

The inflamed organ may be the emunctory of a vital organ, as is the case if the glands of the neck are inflamed, for these are related to the brain "; or the glands of the axilla, which are related to the heart; the glands of the groin, which are related to the liver.

In all such cases one must certainly not employ repercussives — ■ not because it is a wrong treatment for inflammation in these situations, for it is not wrong — but because in this case we do not wish to touch the inflammation itself. Our aim is to direct our energies to enlarging the swelling and convey morbid material to it from the vital organ itself. We can do no good as long as there is disease in the vital organ, and our efforts must be directed towards relieving that. Were we to employ repercussives, we should risk returning the morbid material back to the vital organ, and finally make its state so bad that we cannot possibly mend it. That is why we aim at drawing the unhealthy material down to an ignoble member, so relieving the vital organ of which it is emunctory, and we encourage the inflammatory process m the ignoble member, even to the extreme of applying cupping or calefacient plasters which will draw the inflammation thithen

When the inflammatory mass has in this way become fluid, it may burst of its own accord, especially if it be in an emunctory organ ; the promotion of maturation will help to bring about this result. Sometimes both maturation and incision must be done together. Maturation is favoured by the use of an agent which both obstructs and agglutinates, for in this way the heat of the part is maintained. In carrying out such measures one should watch to see when the innate heat is feeble or the tissues are breaking down. At that moment the agglutinative _ and oppilative remedy must be removed and an aperitive medicine given, making a deep incision. After that, resolvent and desic- cative medicines are to be applied which we shall specify in the Special Part.

When the inflammation is deep-seated it must be drawn towards the skin, even if to do so we must employ dry cupping. 1051 o Hard inflammatory masses. When these are at the end of the first stage, the treatment is to soften with remedies which are " hot " and not very " dry," because_ one must not make it so dense as to undergo calcification. The aim is to dispose the mass to resolution, increasing the resolvents up to a point,

and if one is then afraid that the dispersal of the resolved portion will lead to calcification in the residue, the softening process is resumed. These alternations are repeated time and again until the whole is dispersed by the alternate softening and solution.

1052. Gaseous swellings are treated by agents which have a calefacient effect and rarefy the (gaseous) substance, and open up the pores. This treatment depends on the view that the swellings are due to coarseness of the gaseous particles and to closure of the pores. In addition one must take measures to prevent the appearance of the material from which the gaseous matter arises.

1053. Inflammatory swellings with ulceration. — E.g., vesi- cular or herpetic ulcers. These require infrigidants. If they are like phlegmon, they do not need emollient treatment [Margin: humectant treatment, unless they are to be opened] but desiccant treatment, because the secondary state — the ulcera- tion of the inflammatory mass — which one feared has actually happened, and the proper treatment of ulceration is by desiccants,

not emollients [Mgn : humectants].

1054. Internal inflammatory masses. The morbid material in such swellings must be removed by venesection and purgation. The following must be forbidden: use of baths; wine; bodily exercise (or movement), avoidable mental emotions, like anger and the like. In the early stages repercussives must be given and minimum bulk of food (lit. : not too much, " superfluity "), especially if the organ affected be the stomach or liver. As the time of resolution arrives, one must not omit introducing astringents of agreeable odour, in the manner in which we have set forth for you in preceding pages. This principle is more important for the liver and stomach than for the lung.

Emollient medicines, or mild aperients, are to be given to those cases in which maturation is taking place, for they are beneficial to inflammatory processes. Ex. : nightshade, cassia fistula. Nightshade has the power to disperse acute inflammations in the internal organs. One should give only light food, and not even then either at the beginning of an attack or during it, unless the patient is very feeble. The signs of a collection of [pus] in the internal organs, associated with loss of strength, indicate that the patient is on the road to death unless nutriment is given to sustain his vitality. But the giving of food is very risky. Therefore it will be well if the disease should resolve of itself, and if the (abscess) bursts [i.e., into the alimentary tract], such things as honey-water and sugar-water may be given to lave the

parts, following them with remedies which favour maturation and are desiccant. Finally, one administers desiccants alone.

This subject is fully dealt with in the Special Part under the appropriate headings.

1055. Internal inflammatory swellings in the_ abdomen may give rise to errors in diagnosis. If the condition is not inflammation but rupture, there is a danger of perforation. Such swellings are not usually in the omentum, but in the intestine itself [e.g., appendix], and it is dangerous to give aperients.

26. On Making Incisions

1056. When one decides to make an incision or opening (into the diseased part) one should take into consideration the various small and larger folds of the skin. In the case of the forehead however one would act otherwise, because an incision along the folds there would divide the muscles and cause drooping of the eyelids. Similar care must be taken in the cases where the muscular fibres take a different course to the surface folds. The surgeon must therefore know the anatomy of the nerves, the veins, and the arteries, so as not to sever them by mistake. He also needs various drugs for staunching the blood, plasters to allay the pain, and the appropriate instruments handy — namely Galen's remedy; rabbit-hair; spider's web; white of egg; the cautery. With such agents one is able to arrest the flow of blood if due to an accidental injury (by the surgeon), or whether it be inevitable, or the result of emollient medicines which provoke haemorrhage.

Having opened the abscess and extracted its contents^ one should avoid applying oil, or water, or a plaster containing oil, or " basilicon." One should use a plaster made with vitriol, if something has to be applied. A sponge soaked in astringent wine may be applied to the part.

27. — Gangrene. Excision

1057. When decomposition occurs in a member,_ whether involving humoral matter or not, owing to some depravity of the temperament, and when wet-cupping or the usually effective epithemes particularized in the special books fail to benefit, then one must remove the corrupt flesh. If this can be done without the use of the cautery- iron, so much the better, because that is injurious to the nerves supplying the muscles and .is dangerous to the arteries.

If this is unavailing, and the decomposition is spreading

still more deeply into the flesh., excision becomes necessary and one must burn the place with boiling oil to antagonize the virulence of the disease and prevent haemorrhage. The flesh will fill up again but the skin will shrink and resemble flesh in its hardness.

1058. When you are about to excise the gangrenous part, cut along the bones where the flesh is adherent, and still healthy, and the pain is greatest, this being the indication of the healthy margin. Any part that is boggy and flabby belongs to the gangrenous part and must be excised with it.

1059. Should the part you ■ propose excising entirely surround the bone, involving the foramina where gangrene is taking place, excision and the use of a saw is required. If you decide to do this, go in between the place for excision and the site of perforation and flesh, to avoid causing pain. If bone is projecting into the part to be excised, and is irreducible, and there is a risk of the tissues next to it undergoing gangrene as well, we should raise up and tear off the flesh from it, stretching it by bandages to an adjoining part or using any device for the purpose which seems best for the occasion. The object is to separate the diseased part [and its fasciae] from the healthy tissue as far as possible, after which it can be wholly excised.

1060. If the part affected is large, and with nerves, arteries and veins in the vicinity (for instance, the thighbone), and if the gangrenous change is very great, the doctor should leave the case severely alone.

28. The Treatment of Loss of Continuity (including Ulcers, Blows, Bruises, Dislocations)

1061. Fracture. Loss of continuity in large members [e.g., fracture of a long bone] is treated by securing apposition and applying bandages in a suitable manner, as described in the Special Instructions given in the appropriate Section. The part must be kept at rest. The diet should include conglutinant foods which will supply chondrogenous nutriment to the seat of injury,

and bring about the closure of the edges of the fracture and make the bone continuous again. Food of 'this kind can be prepared from the feet of animals. When a person has reached the prime of life there is no other way of procuring reunion of the bone. But further details on restoring continuity are given in the Special Part.

1062.^ Wounds. — There are three principles to follow when treating loss of continuity in fleshy tissues. (1) Stabilize

the part which is insufficiently firm, arrest the bleeding, and if there be a discharge, strive to reduce its amount ; (2) make the immobilized part consolidated by administering appropriate medicines and suitable articles of food ; (3) prevent sepsis [lit., putrefaction] as much as possible.

If all three cannot be achieved, concentrate on the two which can. You know from what has already been said how the arrest of bleeding is achieved. Consolidation of the part is secured by apposing the edges of the wound, and by applying desiccant remedies [which tend to reduce the amount of discharge], and by taking agglutinative foods.

1063. Ulcers. — In treating ulcers, the aim is to procure dessication, so that the exposed surface shall dry up. Septic changes are treated with caustic medicaments such as yellow or green vitriol (an impure copper sulphate), unslaked lime, arsenic. If these do not succeed, the cautery may be needed, and an application prepared with verdigris, wax, and oil ; the verdigris is cleansing ; the oil and wax counteract the undue causticity ; and so we have a medicine suitably modified or attempered.

All ulcers are either simple or compound. They are simple when they are of small size and there is so little loss of substance that the margins can be reunited, the union being secured by seeing that no oil [or sand or dirt. — Aeg.] or dust gets in between the margins during the process of healing. The fact that the opposite sides will meet ensures that there will be no loss of substance. When the ulcer is so large that the two sides cannot be brought together, and there remains a mark, or depression, or a gap, which is full of sanious matter, there being already an actual loss of substance, the treatment must be desiccant.

If there is loss of substance, then, healing will necessarily be by cicatrization. This is induced in the first place by means of astringents, and in the second by applying acrid [or escharotic] substances, for instance — yellow and green vitriol [cf. " red lotion "], because these assist desiccation and the formation of a scab without producing further corrosion, and consequent enlargement of the area of the ulcer.

1064o If the loss of substance be of flesh, as happens with deep wounds, we cannot hurry the cicatrization. The first thing to do is to encourage the formation of fleshy granulations, and this will not occur unless the " dryness " be hardly more than of the first degree. One keeps a look-out for any conditions which will expedite recovery. Thus (i) the state of the temperament

of the organ concerned as compared with that of the ulcer itself. — For if the organ in question is very " moist " in temperament and the ulcer not very " moist," a small amount of desiccation— namely, to the first degree — will be sufficient, for the malady is very nearly the same in character as the member affected. But if the member (in which the ulcer is situated) is dry in temperament, and the ulcer very moist, desiccation to the second, and even the third degree will be needed before the temperament of the lesion can be restored to the normal. Cases which are between the two extremes will need equalization of the respective states.

One must also consider (ii) the temperament of the body as a whole. — If the body is of very dry temperament, and the diseased member is more humid than normal, we aim to reduce the humidity to one more nearly approaching equipoise. One applies desiccant remedies. The converse applies if the temperament of the body were more humid and the affected limb were drier. If both the body as a whole, and the affected part are increased in the same direction, more decidedly dessicant treatment is indicated if the excess be on the side of humidity, and less desiccant treatment if the excess be in the direction of dryness.

One must also consider (iii) the potency of the desiccants. All desiccants promote the formation of granulation tissue (lit. flesh), but a powerfully desiccant action is not required. All that is needed is to hold back any material which is of a character likely to contribute to the formation of granulations in its passage down into the affected part. Therefore one searches for a desiccant agent which is useful for promoting cicatrization rather than the formation of " flesh," but one also prefers one which is abstergent and cleanses away the sanious matter to one which promotes desiccation. The ideal desiccant promotes cicatrization, consolidation of the part and restoration of continuity. All remedies which are desiccant without any caustic (by-) action can be included among those which promote the formation of granulations.

I065„ Ulcers in situations which are not fleshy, and round ulcers, cannot be made to heal quickly.

Internal ulcers require the admixture of purifying agents like honey, or special remedies for the affected part (e.g., diuretics for ulcers in the urinary passages) with the desiccant and styptic preparations needed in any case.

To promote cicatrization one may use a remedy which is viscous as well as astringent or styptic, like Lemnian earth.

1066, Conditions which prevent the healing of an ulcer.— (i) unhealthy temperament of the affected part. One must endeavour to rectify this, (ii) Unhealthy temperament of the blood supplied to the part. This is to be remedied by diet, choosing

that which will produce good chyme, (iii) Undue abundance of blood entering the part, rendering it too humid. This is counte r-acted by purgation, by a diluent diet, and exercise as far as is permissible, (iv) Disease of the underlying bone whereby sanious matter is constantly (flowing over the ulcer). The only remedy for this is to deal with the bone-disease : massage can help to get rid of the diseased bone, otherwise it must be excised; (v) adductive plasters are often required for the treatment of ulcers to enable the fragments of bones and foreign objects lodged m the flesh to be withdrawn, for otherwise they prevent healing; (vi) more nutritive food may be indicated, in order to provide strength to the tissues and yet the nutriment may need to be curtailed in order to lessen the discharge of sanious matter from the ulcer. So there is a certain difficulty in adjusting these contrary objects, for sanious discharge is debilitating, and the remedy for this is to supply more nutritious food; and yet to make the diet more liberal entails increasing the amount of sanious discharge._ The doctor has therefore to make his decision according to circum-stances, [(vii) Malignant disease. Cautery and excision are

indicated.]

1067. Bathing. — When an ulcer is forming, the patient must not enter a bath, or use hot water, because this will attract matters to the ulcer which will lead to the formation of an inflammatory swelling. But when the ulcer reaches a stationary stage, and discharges sanious matter it may be permissible.

1068. If an ulcer recurs soon after being healed, it needs consolidation and is on the way to becoming a fistula. One must therefore watch the discharge very carefully, and also the colour of the edges of the ulcer. If the discharge increases apart from an increase in the amount of food, it denotes maturation.

1069. Dislocations* — We speak now of _ the treatment when tissues are torn, as by dislocation. That is, we speak of cases in which there is a loss of continuity deep down under the skin. In such cases, it is evident, the medicinal agents must be more potent than when the lesion is exposed to view.

These deep tissues are rich in blood, and therefore the congestion needs relieving, but this must not be at the risk

* Note that the terms employed in the original text are indefinite. The use of the words " dislocation," " contusion," " sprains," represents the apparent intention of the text, though the context is not consistent therewith throughout.

of undue desiccant action, for in that case the tenuous parts would be dispersed, and the thick residue would become a stone.

When we have procured as much dispersal as is necessary, we apply a consolidative of desiccant character, to enable material to escape, instead of lodging in the cavity and finally giving rise to a stone; in such a case it might either decompose or be removed in some other way, allowing the continuity to be restored.

If the lesion is still deeper, the place is scarified to enable the medicament to get in better.

1070. Contusions. — If contusion is associated with loss of continuity, venesection may suffice. But if the dislocation is associated with a severe crush, the latter must be alleviated first, with appropriate medicaments. If the contusion be extensive, desiccants are used. If it be circumscribed, like a stab, it need not be troubled with, unless the wound is a poisoned one, or unless there is great pain, or the nerves are involved, or if there is a risk of suppuration supervening, or if aneurysm develops.

1071. Sprains.— A soft bandage is enough, if the condition is not painful. Appropriate medicaments are applied over the dressing.

In cases of falls and blows, venesection is to be done in some part of the body, and the diet must be light ; meat and the like must be avoided. Treat with decoctions and potions.

The subject of loss of continuity of nerves and bones is deferred to a special chapter in the Special Part.

29. — Cauterisation (as a Therapeutic Measure).

1072. Cauterisation is a very useful method of treatment, for (a) it prevents the spread of a destructive lesion, and (F) has an invigorating effect on a member whose cold temperament we wish to rectify ; (c) it breaks up putrefactive matters imprisoned in a tissue ; (d) it restrains the flow of blood.

A cautery is best made of gold.

The place to be cauterised may be exposed to view, in which case the cautery can be applied without more ado ; or it may be deeply situated — for instance, in the nose, the buccal cavity, the anus. In this last case a special appliance becomes necessary in the form of a hollow cannula, enclosed in some material like Samian earth or the " talc " of the Arabs, or chimolean earth (a red clay) or the " magra " of the Arabs, soaked in vinegar. Around this, one places cloths wetted with

extremely cold rose-water or certain juices, and the instrument is introduced so that these coverings make a little pit to receive the cautery, whilst protecting the tissues around from injury, as well as the walls of the meatus down which the cautery will pass. The diameter of the cautery itself should be less than that of the cannula, so that when dexterously introduced, it will reach the exact spot to be treated without touching the sides of the cannula.

The person applying the cautery must take care not to expose nerves, or fasciae, or ligaments to the brunt of the burning. For arresting haemorrhage, great heat is required, with vigorous cauterisation, so that a firm thick eschar is produced which will not readily come off. It is this crust forming under the eschar which stops the blood-flow, and therefore if it became loose the" condition would be worse than ever.

If the cautery is being applied to remove dead flesh (tissue), pain will show you when you have reached the healthy tissue.

If the cautery is being applied to the bone under the (dead) flesh, one must prolong the time of cauterising the area till the dead matter is all completely destroyed.

If the cautery is to be- applied to the skull, the application must be gentle, so as not to risk roasting the brain, or shrivelling up the membranes of the brain. In the case of other bones, there is no need to be so anxious.

30. — The Relief of Pain.

1073. You have already learnt that the causes of pain may be comprehended under two headings : (i) sudden change of temperament ; (ii) loss of continuity. You have also learnt that the first of the headings comprises hot, cold, moist or dry intemperaments ; (iii) and the second occurs apart from deposition of matter, or as the effect of the presence of chymous, gaseous or inflammatory exudate.

The relief of pain, therefore, depends on making use of the contraries of these causes. What the contrary of each is, you have also already learnt, and you have learnt the way m which an intemperament and inflammation, and gaseous deposits are treated.

When the pain is too intense, it may cause death, this resulting in the first place from coldness of the body, and secondly from tremor [of the heart], with a small pulse, which finally fails, thus bringing death.

1074. In brief, pain is relieved either by altering the

temperament, or by dispersing the material which produces it, or by producing insensibility. The last named destroys the power. of sensation in the part concerned. Insensibility of a part is only produced (a) by making it very " cold " ; (b) by exposing it to the toxic properties which interfere with its functions. Agents which act by producing relaxation, and have a gently soothing effect are such things as dill, linseed, melilot, chamomile, celery seed, bitter almond, and anything which is hot in the first degree, especially if combined with a drug of glutinous character like the gum of prunes, starch, lead carbonate, saffron, gum-resin of cristus, marsh mallow, cardamom, cabbage, turnip, and their decoctions, pharmaceutical adipes, zufa-i-ratab, and the oils specified in the Formulary, laxatives, and all forms of evacuant. Laxatives are to be given after other methods of evacuation have been tried, if evacuant treatment is needed, until you have prevented any further material from passing down into the affected part. For it is just that that brings an inflammation to a head, or makes it (burst) open.

1075, The most powerful of the stupefacients is opium. Less powerful are : seeds and root-bark of mandrake ; poppy ;

hemlock ; white and black hyoscyamus ; deadly nightshade ; lettuce-seed ; snow and ice-cold water.

1076,, One must not overlook an extrinsic cause of pain, by mistake. Thus, external heat, external cold, a faulty posture in bed, falls during epilepsy or during intoxication, etc. Search for intrinsic causes must be otherwise made, by looking for the signs of plethora (which you now know), or for the causes likely to produce plethora.

1077 o A source of pain which was at first external may come to be internal, and persist. Thus, drinking of icy water will cause severe pain in the stomach and liver-region. In such a case evacuant treatment and the like may not be particularly indicated, and the use of a bath, and a good sleep after it may be enough. Or, a person may eat something heating, and a severe headache may result from it. For this it is enough to drink cooled water.

i078 o Selection of remedies. — Sometimes the method used for alleviating pain acts so slowly that there is a risk of its becoming unbearable before the remedy has come into effect. Thus colic may be cured by purging the small intestine of the material giving rise to it, but this requires time. On the other hand one may give relief speedily, but only at the risk of worse harm in

the end. Thus, it is possible to apply remedies which will in a case of colic at once make the painful part insensible. The doctor is therefore in a dilemma in such a case, and^ requires good judgment so as to decide which is more harmful, to preserve the strength or to allow the pain to persist. He has to decide which is worse, the pain, or the danger liable to arise from inducing insensibility of the part. He has to decide which is the more important to avoid, or which is the lesser of the two evils. For, should he allow the pain to continue, there is the risk of it increasing so much as to prove fatal; and if he makes the part insensible, this danger is averted and yet some other part is affected adversely. However, one may be able to remedy that, and then if the pain returns in consequence, one may repeat the process. .

In addition to all this one must select the stupetacient remedy according to its own temperament, and the ease with which it exerts its effect. One might administer it in the form of a compound in theriacs (made with it), unless there is particular need to secure a powerful action.

1079. Internal medication for pain. — Some members, like the teeth, cannot be treated even by the local application of narcotics, because this is not a final cure. In this case better relief is obtained by internal remedies. So, in painful diseases of the eyes, less harm would result this way than from local application of the remedy.

In the case of other organs, the harm done them by taking a draught is easily rectified. The harmful outcome would be increased, for instance, in a case of colic, because^ the cold [the narcotic is " cold "] increases the amount of " matter,

and solidifies it and encloses it.

1080. Stupefacients often relieve pain because _ they produce sleep — one of the factors whereby pain is relieved, especially if the patient is fasting, and there is a material cause

of the pain.

Stupefacients are safer when they are compounded with other drugs as diluents (e.g., theriac), as for instance " philonium," aromatic electuary or lozenges. But their efficacy is not as great. The fresh lozenges are more efficient than older ones, and very old ones have no action at all. Those which are between the two extremes are intermediate in efficacy.

' 1081. The fains of flatulence are very severe and are yet easy to relieve at certain times. Sometimes it is sufficient simply to pour hot water over the part, though one must take care the

pain is not due to an inflammation (which simulates the pain of flatulence) before doing so. It would be a serious mistake, especially at the beginning of (suppurative) . inflammation to administer a hot water douche (shower). Sometimes such treatment makes the condition worse, supposing it does not disperse the gases, or cause them to expand.

1082. Poulticing, — Another sort of remedy for flatulence is z. poultice. A poultice may act better if it is combined with a desiccant like imllet. Poultices are not applicable to some members; for instance, the eye. In that case cloths are used.

Some poultices are made with hot oil. The most efficient poultices are those made with flour of orobs boiled in vinegar and dried before use. Weaker ones are made with bran, treated in the same way. Steamed salt is burning (scorching); steamed millet is weaker, and better. A safe and easy way of steiming a part is from boiling water in a vessel, but it requires careful control to avoid any of the mishaps we have referred to above.
1083* Dry (hot) Cupping comes under this heading as a powerful means of allaying the pains of flatulence. By repeating them over and over again the pain will be entirely abolished. But this is at the cost of those untoward effects we have already described.

1084„ Other means of allaying pain. — (1) Walking about gently for a considerable time. The movement softens or relaxes the tissues. ' (2) Fats of thin consistence, and the oils already named. (3) Agreeable music-^specially if it inclines one to sleep.* (4) Being occupied with something very engrossing removes the severity of pain.

31. — The Priority of Choice of Methods of Treatment.

1085, When several maladies occur together we should deal first with that which fulfils one of the following three conditions :

(1) When the one must be cured before the other can be relieved. For instance, if inflammation and ulceration occur simultaneously, the former must be attended to first until the intemperament on which it depends is remedied. The ulcer will never be healed until that is put right. The ulcer is then treated.

* Like the mother's lullaby to her child in pain.

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(2) When the maladies are related as cause and effect. Example : obstruction and fever. The former must be treated first If the obstruction will only yield to a " hot " remedy, we shall not be able to cure the fever. We may treat phthisis (inflammation of the lung) with, desiccants, but we shall not cure the fever, because its cause is beyond our reach. The cause would be amenable to desiccant treatment, but this would keep

up the fever. .,11-1 f A

(3) When it is absolutely essential to deal with one o± the maladies. Thus suppose relapsing fever and palsy should occur concurrently. There is no question about treating the former, and venesection is the proper treatment. But this will

not cure the palsy. .

The disorder and the symptom to which the malady owes its name may occur together. In such a case one would begin by dealing with the malady itself. But if the symptom became urgent, we should turn our attention to it, and leave the disease itself alone for the time. Thus, in a case of colic, we should turn our attention first to relieve the violent pam, even though the condition causing it is thereby adversely affected. Again, we should postpone a venesection (otherwise indicated) it the stomach were in a feeble state or if there were diarrhoea, or it

there were nausea. .

Sometimes we should do a venesection (for instance^ without hesitation even though that would not remove the whole trouble. For instance, in a case of spasmodic disease, we should not empty out all the morbid humour, but we should leave some behind rather than risk losing some of the healthy humour,

in the hope that this itself would cure the spasmodic movements.

The Seal of the Work, and an Act of Thanks.

May this our compendious discourse upon the general

principles pertaining to the science of medicine be found

sufficient.

O ur next task will be to compile the work

on Simples, with the permission of

Allah. May . He be our

aid, and Him do we

thank for all His

innumerable

mercies.

THE END OF THE FIRST BOOK OF

THE CANON OF MEDICINE OF

AVICENNA THE CHIEF

OF PHYSICIANS.

Brief Summary of the Contents of
the Remaining BOOKS of the Canon

BOOK II.

Materia Medica, Pharmacology and Therapeutics.

PART I.- — General Principles. The temperament or constitution of drugs, and how it is determined (a) by experiment ; (b) by • deduction. An account of all the actions which drugs may possess. The collection and preservation of herbal and other remedies.

PART II. — The properties of each drug taken seriatim. — The properties are classified under the following headings : General

and detailed description, tests for purity, qualities, general actions in terms of the subject matter of Book I ; special actions on each system of the body, or special diseases ; specific actions ; antidotal properties ; alternative remedies or adjuvants.

The Latin edition gives 760 names, and the Bulaq gives 802 names. But the actual number of remedies is rather less, because some of the items are simply cross-references, the same drug being known under different names.

The second part of " De viribus cordis " fulfils the alternative title " De medicinis cordialibus " in being a careful account of the medicines acting on the heart, arranged on the same plan as the above, and constituting a useful supplement to the second Book.

The account of the individual drugs includes numerous quotations from various sources, notably Dioscorides.

BOOK III.

SPECIAL PATHOLOGY (in its modern sensej. In this Book the various systems are taken up, and the diseases to which each is liable are discussed, giving etiology, symptoms, diagnosis, prognosis and treatment. .

Special mention may be made of the following Sections : —
1. — Head, Eye, Ear, Nose, Mouth, Throat, Teeth.
2. — Chest, Lung, Heart.
3.- — Alimentary Tract : stomach, intestines ; liver, gall-bladder and

spleen.
4. — Urinary system.

5. — Conception. Pregnancy. The uterus. Diseases of women.
6.— The Muscles. The Joints. The Feet.

7. — The following special subjects : The intemperaments of the Brain ; Headache in all its aspects ; various diseases of the Brain. Epilepsy. Paralysis.
Note that the Section on the Eye has been translated into German 30 (ref. in the Bibliography),

BOOK IV.'

_ PART I. — Fever (considered in general terms). One-day, tertian, quartan, septic and pestilential (i.e., epidemic) fevers. The subject of Crisis. Symptomatology of Fevers. Suppuration. Lepra.

PART II. — Minor Surgery: Wounds and their general treatment. Injuries of nerves. Fractures. Dislocations. Ulcers.

PART III. — Poisoning: mineral, vegetable, and animal poisons. Bites from animals and man.

Part IV. — Beauty Culture. —The. hair, the nails, the skin. Wasting. Treatment of offensive odour, or discoloration. Pedi-

culosis, etc.

BOOK V.

The FORMULARY. — This is a collection of careful recipes,

with copious details on the proper way to prepare " compounded "

medicines.

This book was translated into German by Dr. Sontheimer. (Ref. in the Bibliography).

(A copious index and glossary concludes the Latin Venetian edition (1595. 1608) of the Canon, lists of drugs being given according to their action on the body and according to the diseases for which they may be applied.)

Continuation (from 173) of Translation of " de Viribus Cordis."

1. The Nature of the Breath, and its Purpose.

IFE (1086) and every perfection, and every good* for which creatures* are destined, comes from nothing but the Primal Most High Truth — the source „ of all good, and from the Strong ~{ Desire ever proceeding therefrom.

1087. Nevertheless, the recipient thereof requires a specific capacity for

^ ^..__. __. reception of the good. A creature*

cannot receive indifferently. For instance, wool cannot be wool (lit., have the "form" of wool) and at the same time have the characters of a sword. Water cannot be water (lit., have the "form" of water) and at the same time receive the "form" of human nature.

1088. All corporeal bodies may receive life except the four first principles, and whatever is of like nature to them. For these are non-living bodies, and are also of negligible bulk. In fact their bulk is infinitesimal compared with the planets, and still more strikingly so compared with some of the fixed stars. Indeed it can be shown that these first-principles in their totality have not as much bulk as a point compared with the body of Saturn ; how much less then are they when compared with the higher bodies ?

1089. Those who realize the Truth know the reason why these elementary bodies do not receive the " form " of life. Even the simplest of living beings is quite different from them ; and the celestial bodies, adapted as they are to a very wonderful kind of corporeal life, are very different from them also. The first-principles are entirely beyond the possibility of life.

* This word is used in the Scholastic sense.

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§265. It may be noted that corporeal bodies receive life when they enter into the composition of living matter, whether of protozoa or the like, or of highly organized animals and plants. The author does .not say that all corporeal bodies are " forms of life," as some have assumed.- — The distinction between matter and form already discussed (§§55-105) makes clear that which is expressed slightly differently in the preceding passage. It should be borne in mind that the first principles are really neither " matter " nor " form " ; the discussion in the text is relevant only because the listener is supposed to have failed to realize this. Although the first-principles are co-termmous with the " infinity " of the universe, they have not either mass or volume. The comparison between a " point " and a "world " is characteristically mediaeval.

_ 1090, It is the mingling of substances in the compound bodies which accounts for their ability to receive life. The com-mingling of the components so modifies their contrarieties (cf. 20) as to produce an ensemble (i.e., the temperament : cf. 27), in which all the various seeming contraries (nothing is really absolutely contrary to anything else*) are blended harmoniously. The more harmonious the blending, the more adapted is the resultant compound for being the vehicle, not merely of life, but of a very particular kind of life. Perfect equilibrium and perfect balance renders possible the manifestation of the perfection of rational life which celestial beings possess. And it is just this kind of character which is to be found in the case of the human breath !

1091 . The breath, then, is that which emerges from a mixture of first-principles, and approaches towards the likeness of celestial beings. It is a luminous substance. It is a ray of light. J

1092. This accounts for the fact that the mind rejoices when it looks towards the light, and is depressed when exposed to darkness. _ Light is in harmony with the breath. Darkness is in discord with it.

3. The Chief Emotions in Relation to the Vital Breath. Their First Causes : Potentiality and Disposition.

AGES (1093), and those physicians who agree with them, are satisfied that joy and sadness, fear and anger, are passions peculiarly related to the breath of the heart. Each of these emotions is maintained or discon-tinued (1) by the agentf ; (2) by the per-,

sistence or cessation of the disposition
exhibited by the substance of the patient.

* A typical Sufi conception.

f Scholastic sense.

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1094, Sages perceive a subtle distinction between potentiality, and disposition, as represented in this table :

Potentiality.

1. Pertains equally to both, contraries.

2. One and the same person can be glad or

sad.

3. Is perfected into a disposition.

4. To pass one's life with a breath of sad or

glad potentiality is one thing.

5. Glad or sad potentiality can harmonize

equally with the breath.

6. Potentiality for both contraries is in-

separably inherent in the breath from
the very first.

Disposition.

Does not.

Optimism and pessimism can only
exist in distinct persons.

Is perfection of potentiality to-
wards one or other contrary.

To pass one's life with a breath of
sad or glad disposition is
another.

Glad or sad disposition does not.

Disposition towards a contrary (emotion) is not inseparably inherent in the breath from the outset but may appear under the influence of super-vening agents.

Joy, and the Causes of Delight and Sadness.

'OY (1095) is a form of delight. A thing _ is delightful when it is the perfection of its corresponding faculty. For instance : the perception of a sweet or sapid taste, or a pleasant fragrance ; the overruling of a feeling of anger by a good judgment ; the realization of some useful outcome of the reasoning or imaginative faculty.
-^aaa^r 1098. There is a certain power accruing

from every perfected delight. It is the perfection of the given

power which produces joy.

" Delight is a perfection of operation " (Summa contra Gent., xc», p. 190).

" Toy and delight differ in aspect. For delight is caused by a good conjoined in reality while joy does not require this conjunction, because the mere repose of the w 1 in the thing willed suffices for the notion of joy. Hence delight is only in alonjo^ned good, if it be taken in its proper sense ; whereas joy * in a separate good." (ib. p. 191.)

1097, Some people have expressed the opinion that " delight " is really nothing but " the departure of abnormal disposition," and that there cannot possibly be delight where there is no possibility of going beyond the natural disposition. This view has arisen because there are some forms of power which

cannot bring delight until some abnormal disposition has first been got rid of. Nevertheless, the opinion is wrong ; it takes a thing which Is per accidens for a thing^r se — a fallacy of reasoning which is mentioned in " the Definitions."

1098. Delight implies attaining a goal, and the one who apprehends it can only be aware of the delight because he is aware of the change.. For instance (1) in the case of touch, it is evident that the quality of tangibility can only provide delight as long as the tactile organ continues to be in the opposite phase. Once the polarity has reached equilibrium, the character of the organ will have become " set," and cannot provide further change. From this time there ceases to be any sensation of

pleasure.

(2) In the case of the hectic patient, who does not suffer from heat subjectively however high the body temperature may be ; a patient with an acute fever may feel hotter than the other even though his temperature be not so high. This is because in the hectic case, heat is already resident in tissues of corresponding constitution ; in acute fevers, it is as if the heat flew past, afraid of the manner in which it may find the elements mingled in the tissues. Doctors rightly consider the state of the members of a hectic case as " bad, though balanced " ; and in the other case regard the quality as " unbalanced and therefore bad."

It is clear then that pleasure ceases as soon as one is accustomed to the completed sense-perception because one can now no longer be aware of the entry of sense-perceptions. The reason why pleasure is experienced at the departure of an abnormal disposition is that one is now sensitive to the slightest change in the (now) normal disposition. It is possible that this sensitive-ness to change in the natural disposition may appear syn-chronously with the departure of the abnormal disposition. People are then apt to think the latter was the cause of the former, when it is not so. The real explanation lies in the attainment of perfect perception. It is this that is the per se — the intrinsic basis of delight, (cf. The Theory of Pain : 432.)

1099. In other words, the disposition towards delight depends on the constitution of the participating breaths, and on the degree to which the disposition is favourable to their presence, always provided that the substance of the breath is not diminished, and the disposition likely to be favourable is not an abnormal one.

HOG. Effect of quantity of breath. — Should a breath with a

tendency towards delight be abundant, its action will be corres-pondingly powerful. The greater the quantity, ,the greater its vigour and the greater is the amount of it which will persist at the place of its origin— that is, in its " matrix." Consequently, under these circumstances it will radiate out in greater measure to the various members, and produce that particular state of expansion which spells.]oy and pleasure. For, if the breath in question were only moderate in amount, the substrate concerned would hold it greedily, and not allow it to expand as freely as otherwise would be the case.

1101 'Effect of the quality of the breath.— The nobler the character possessed by it, and the nobler its substance, the more luminous does it become, and the more like celestial substance will it be."

§ 2 66. This passage is characteristically Sufic ; the reference being to the effect of Burification of the *' breath" in the exercises culminating m bhaghal tne perfonal success and accuracy of the physician in his dealing ; with .m ^ick bemg progressively enhanced the more the purification of his breath is secured, lhe rarefaction of the breath, and the replacement of coarseness by fineness, are desir-able in all, but come from experience and not from study.

1102 Such, then, are the various points about the tendency towards pleasure and joy. As regards sorrow and grief, it is just a question of the converse. Once the general sources of delight and pleasure are thoroughly grasped, the sources of joy become intelligible, since joy is a form of delight.

1103 By way of summary, it may be said that when the breath residing in the heart is plentiful (as it is when there is plenty of that material from which it is rapidly and constantly being generated) ; when it is balanced in temperament; when it has a luminous, beautiful and bright substance- then there is a strong tendency to joy.

When the breath is scanty (as occurs in convalescents, in long-standing illnesses, and in old persons) ; when it is not balanced in character (as in morbid states) ; and when it is («) very dense and coarse in substance (as in melancholy and old people)— it cannot arouse joy ; (b) very delicate m substance (as in convalescents and in women), it will not allow of expansion; (c) confused (as in melancholy people)— in all these cases there is a very strong tendency to depression, sadness and grief.

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Tabular Summary.

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Disposition of mind.

Corresponding character of breath.

When met with

Cheerful

Quantity : plentiful.
Temperament : balanced.
Substance of breath : brilliant, full of light.

Gloomy.

Quantity : scanty.

In convalescence,
In prolonged illness,
In old age.

Temperament : unbalanced.

In disease.

Substance : dense and gross.
Attenuated.
Confused.

In old age ; in melan-
choly.

In women ; during
convalescence.

In melancholy.

5. The Extrinsic Causes of Delight and Sadness.

1104. When all the conditions required for a given act are present, the slightest agent will now suffice to effect the act. Thus, when sulphur is used for kindling, it is because sulphur is set afire by a moderate amount of heat, whereas wood cannot be" made to burn without twice as much. So, when the mind has a" breath whose tendency to receive the impress of gladdening agents is complete, a slight agent will suffice to evoke gladness.

1105. Action of wine on emotions and on breath. — This is shown in the instance of those who drink excellent wine, for in such persons gladness increases to such a pitch that onlookers wonder how they can be jovial without reason. Such a thing,, of course, cannot be. No impression is possible without an impressor.

But the fact is that when wine is taken in moderation, it gives rise to a large amount of breath, whose character is balanced > and whose luminosity is strong and brilliant. Hence wine disposes greatly to gladness, and the person is subject to quite trivial exciting agents. The breath now takes up the impression of agents belonging to the present time more easily than it does those which relate to the future ; it responds to agents conducive to delight rather than those conducive to a sense of beauty. It also takes up an impression from agents which are prone to evoke conjecture rather than from those which are concerned with real understanding. The explanation of this is that normally the power of the mind brings about an act in the brain such as will

expel the breath (when it is in the phase of having a mild degree of moisture) ; the brain thus becomes able to obey the motions of the thought and the exercise of the faculty of understanding. In inebriety^ however, there is a very great inclination towards excess of moisture (which is incompatible with obedience to the understanding), owing to admixture with ascending and over-flowing" vapours, which render it too humid This moisture prevents it from obeying the intellectual faculty and the ten-dencies of the thought, except in respect of very material and corporeal topics. It cannot serve in respect of very delicate spiritual matters. Whether stable or agitated, moisture cannot take part in the formation or presentation of spiritual affairs ; it can only respond to corporeal ones.

1106' Stages in inebriety.— -The following are the various steps of degradation of the mind, not arranged chronologically : First recognition of truth is impaired, and the operation of the mind is iinperfect. The intellectual power falls in proportion. The substrate continues to attract breath until the temperament of one has reached up to that of the other, after which the flow of breath of course comes to an end. . (i „.

1107 The power of the mind (which is in the heart) has a greater affinity for joy during the state of drunkenness ; the gladdening things that come to it do not reach it by the usual route between the senses and the phantasy (or even the cogitative faculty), because the sensitive faculties have come into dominance. The repletion of the breath with moisture has altered its vigour The senses now dominate the inner breath, and are more powerful than the understanding. The understanding (as for instance for geometry and other exact sciences), meeting as it does a breath which is so wanton towards it, readily submits to the senses Things being so, no wonder that the conception of future, of beauty, of rational affairs, has become blurred in the intoxicated person's mind; the sense-perception of sweet, glad, and delectable things prevails, and the sense of the present is very strong. It is the very strength of this tendency that accounts for the fact that quite a slight agent will evoke gladness and mirth. Onlookers think that such persons are jovial without reason. But this cannot be so. As a matter of fact, some causative agents of joy and gladness are powerful, while others are weak ; some are known and obvious, others are not known and occult. Many of -the latter are not known, not because they occur only rarely ; they occur regularly. The fact is that we notice things less particularly the oftener we encounter them.

_ 1108. It is now necessary to detail the powerful and obvious sources of joy and gladness. Instances of sources of joy are the following : (1) gazing upon the daylight, among cheerful people. The evidence of this is that being in the dark makes them sad. (2) Having intercourse with those of like beliefs. The evidence of this is that solitude makes such people sad. Gladdening influences- are such as (1) obtaining that which is wished for ; (2) satisfying an intention without meeting opposi-tion ; (3) preferring to do something peaceful ; (4) confidence ;

(5) the memory of past and future joys and hopes ; (6) thinking about ambitious things ; (7) mutual argumentation with kindred minds ; (8) relief from pain ; (9) contact with curious (interesting, unusual, remarkable, new) things ; (10) uplifting of the mind ; (n)_ meeting friends and friendly surroundings ; (12) over-coming deception in small matters : and many similar things to be found mentioned in books of rhetoric and morals.

Compare also the following : "All the passions of the irascible appetite rise from the passions of the concupiscible appetite and terminate in them ; for instance anger rises from sadness, and having wrought vengeance, terminates in ioy " (St' Thomas 81 , Si, a. 2 ; p. 330). 1 y \ ■

1109. All these vary in different races according to their affections, habits and ages. None of them is invariably absent. If two agents usually having a gladdening effect occur together, the effect is not so much the greater. All that happens is that the disposition is more drawn to one than the other. The effect of one only overrules that of the other if the agent in question be very powerful, or, if it be weak, only if it be very persistently at work. (Cf. 1115.) This accounts for delight being able to persist during the state of inebriation, and for the fact that melan-choly persons with confused breaths keep sad after agencies pro-ducing a sense of desolation and sadness — such as the following: (1) reflecting that one's fatherland is distant ; (2) pondering over many injuries already past and done with ; (3) hate and rancour ; (4) bad health ; (5) difficult circumstances of life ; (6) thinking terrible things are going to happen in the future ; (7) thinking of the necessity for death, which natural judgment ignores because of the obvious fact that we must die ; (8) thinking about something that it is disturbing to meditate upon ; (9) being away from an agreeable occupation ; (10) having thoughts that distract from one's occupation ; (1 1) distraction from that which is desired for and wished for ; (12) many other similar things, and others which are beyond comprehension. Things of this sort easily sadden a mind which is disposed to become sad.

Moreover, in melancholy persons, the vividness of the imagination of depressing .things itself causes them to appear, because the thing whose image is represented to the mind is already there in actuality. Hence depression persists.

1110. Vividness of imagination goes with dryness of the breath,. the movement of which the will has power to correct We find that the understanding is drawn away from rational actions by the senses and by the phantasy, whenever the character of the breath is perverted ; for the breath moves characteristically towards that direction in which a lack of congenial disposition arises, as when the quality of the breath is very bad, and when it is confused.

6. How each Emotion tends to Generate its own Type

of Breath.

1111. It is not to be thought that every agent tending towards joy or depression necessarily depends only on the quan-tity or quality of the substance of the breath. Other agencies

are concerned.' For instance, the emotions of the mind have to be considered. These tend to one or other of the aforesaid, true though it be that they act through the agency of factors intrinsic in the breath itself (namely, quantity, quality). They do this by modifying the temperamental substrate or by rectifying' the breath or by increasing its quantity. Thus, they dispose

towards joy. . . ,

On the other hand, an agent of opposite sign will tend to

induce depression.

These are the immediate and remote external factors. _

1112. The intrinsic factors are traceable to one single source, because every act of contrary type, if it be repeated often, comes to be more efficient in imparting an effect. Every increment of power carries with it so much more tendency to the accomplishment of the effect. This is sufficiently plain from a purely logical point of view. A body which is very heating tends to impart heat rapidly ; and similarly in the case of cold, rare and dense bodies. The same holds good in the case of the internal potencies. This is how it is that a strong character is formed by repeated practice and repeated experience of emotions. It is m this way that moral character is acquired.

Perhaps the reason underlying this is that when an emotion appears, it often makes the substance of the breath become conducive ; and what is suitable for one thing is unsuitable for its opposite . The oftener it is repeated, the less does the tendency

to the opposite become, for that which is conducive to the opposite, is expelled little by little. This is saying the same thing as logic says. It would be tedious to prove it by syllogism by an acceptable and convincing argument from known premises.

It emerges from the aforesaid that a reiteration of being glad disposes the breath to a state of gladness ; a reiteration of being sad disposes it to depression.

1113. Natural enquiry shows the source of increase of gladness to depend on (1) a strengthening of the natural faculty :, (2) a rarefaction of the breath. The latter is due to the expansion following gladness.

(1) The strengthening of the natural faculty is contributed to by three factors, each of which is itself a source of gladness :

(a) the temperament of the breath ;

(b) over-production of breath beyond that which is lost by dispersal ;

(c) prevention of excessive dispersal of breath.

(2) Rarefaction of the breath is followed by two things :
(i) a tendency towards movement and expansion. This is

related to the fineness (rarefaction) of its substance ;

(ii) an attraction to itself of its own particular nutriment. This is due to the movement of expansion towards a place away from the movement of the nutriment. This particular attraction is really the natural corporeal tendency to avoid emptiness.

In its essence, it is the same with any movement which in itself brings it to pass that the latter things shall take the place of the former. It is the outcome of this law that very distant waters are drawn towards their primary source, and that winds follow the course they do.

1114. Two things follow great depression : (1) weakening of natural power ; (2) concentration of the breath. The explanation of this is that violent condensation and aggregation of the breath obliterates the natural heat and results in coldness.

Two opposites follow upon this, as has already been intimated.

1115. It is therefore evident that intense gladness disposes the breath to gladness, sadness to depression ; that associated depressants do not make an impression on gladness unless they are vigorous ; whereas weak stimulants may and do impress themselves thereon.

It is, of course, the other way about in the case of depressants.

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7. The Distinction between Weakness of the Heart and Cowardice-; Sadness and Their Opposites.

1116. Weakness of the heart and sadness, which some people call " contraction of the chest or heart," are similar and yet different. The same thing may be said about their opposites (vigour and gladness of heart), which some people call " enlargement of the chest or heart" [cf. Ps. 118, 32 ; 2 Cor. 6, 11]. The difference between them is difficult to identify because so commonly one passes into the other. Most people think the two former are passive dispositions ; others think they are active. But there is an obvious difference between the extremes

of each.

Firstly, not every weak heart is associated with depression, nor is depression always accompanied by weak heart. A vigorous heart is not necessarily accompanied by joy ; and conversely.

Secondly, the basis is different in each. Weakness of the heart is a disposition assumed in respect of things-evoking-dread, because it is incapable of tolerating them. Depression has to do with saddening things and the heart' does not tolerate them much. Fear concerns the body ; depression concerns the mind.

Thirdly, there is a difference in regard to the mental effect. Weakness of the heart impels to flight, depression impels one to stand still for the purpose of either resisting or repelling. This

is the opposite action to flight. Weakness of the heart inhibits the powers of motion, depression stimulates them. Consequently there are two emotions associated with weakness of the heart : (a) that of threatening injury ; (b) that of desire to prolong movement. In the case of depression (oppression of the chest) there are (a) sense of threatening injury ; (b) no desire to flee. In the event of there being a decision to flee, it is because of some contingent circumstance rather than because of an intention to give ground. It is as likely that attack and struggle will be decided upon in place of flight.

Fourthly, they differ as to the after-effects on the body. Weakness of the heart and escape from the danger are followed by loss of natural heat, by cold. Depression, after the particular cause has passed away, is followed by kindling of the natural

heat.

Fifthly, they differ in regard to the disposing causes. Too fine and too cold a complexioned breath tends to weakness of the heart, coarseness and hot temperament of breath tend to depression.

Si

I)

The Relations between the Various Blood-States and the Several Emotions (1117).

Blood.	Effect on breath.	Effect on emotional state.
Plentiful, bright, hot.	Oxidative processes active ; Movement swift.	

Tendency to anger.

Plentiful, bright,
attempered.

Abundance of clear breath of
laudable substance, and at-
tempered.

Tendency to delight.

Bright, watery, cool,
tenuous.

Oxidative processes slow ; breath
heavy ; moves centrifugally ;
less is formed ; more is dis-
persed.

Tendency to fear ;
neither joy nor
anger ; heart tends
to be weak.

Thick, turbid, over-
hot.

Breath turbid ; as the blood tends
to "inflame," the breath
thickens, and fails to cool
properly.

Tendency to sadness
and even continual
vexation.

Therefore the
emotion persists.

Rarefied ; bilious
humour increased.

Breath of intense heat, and rarefied

Anger, which comes
and goes.

Ditto, but also bright
and clear.

Joy.

Thick, but not turbid
(rarely met with) .

Thick, but not turbid.

Not sad, but stron
and bold. Very
little anger be-
cause joy neutral-
ises this (i).

Thick, not turbid, cold.

Thick, cold, not turbid.

Timid, dull; upright.

Thick, turbid, cold.

Gloomy, solitary ; a
person of rancour
and resentment ;
anger arises only
at great provoca-
tion (2).

Note 1. — Joy easily overcomes the emotion of anger. It is sadness that fosters anger. For anger is an impulse to expel. Happifymg things harmonize with pleasure, and pleasure entails a tendency to attract or gather in. So it will need a big thing to make such a person angry ; and as a very concentrated breath will result, there can be very little fear.

Note 2.— The anger will not last as long as it would in hot-blooded people (in whom other like conditions are associated), but longer than it does in persons whose blood is rarefied. So he comes to be a man of resentment, because the disposition to hate implies the persistence of hurtful images in the imagination.

2N

1118. Part played by imagination in emotions. — The persistence of an imagination which is disposed towards taking vengeance for a thing is related to persistence. of anger, although there is not sufficient propulsive power to execute the vengeance. The anger is neither marked enough nor mild enough. For it must be understood that when anger ceases quickly, the hurtful image does not " persist in the imagination, but is quickly destroyed ; so rancour becomes impossible.

In like manner, too much tendency to secure vengeance is countered by two factors : rancour and hate. The one is due to the mind being wholly impelled, to vengeance, but prevented from continually reflecting upon the hurtful conditions by remembering the things which follow upon having hate fixed in the memory. The mind naturally hesitates to face impending hurts. Externals tend to draw away from internals and vice versa. It must also be remembered that when there is too much tendency to vengeance in a fearless person, the impression results as if the imagination had already become possessed of the thing desired for. In aiming at the realization of a power, and hastening towards it, the imagination of such a person takes it as actually handled. The image is impressed on the imagination as if actually present ; then the image of the thing in which the purposed action will end is added to the imagination, and the desire for it ceases to be maintained ; the image is abolished, and therefore does not linger in the memory. That is how it is that rancour is not there.

When the noxa is big, as where a sultan or very high dignitary (usually looked on with fear) is concerned, then the urgent anxiety to gain vengeance, coupled with the fear,_ together prevent the image of the desire from staying in the mind. The result is that the picture of the desire and of the noxa are both abolished from the imagination, whereas the image of the fear is so much the more dominant to the mind that it evokes a desire to flee and not attack. Here again, the image of rancour cannot persist in the mind.

In the case of persons under puberty, or weakly persons, it is so easy to take vengeance on them, and there is so little fear entertained of them, that the vengeful mind pictures the vengeance as if already accomplished. Excessive ease in securing vengeance makes it pictured as if already in one's hand. _ The imagination acts not according to what is in the matter at issue, but according to that which it pictures to itself. So, when ease of fulfilment arouses the thought that vengeance is attained, the

weak-minded person ..takes it as actually attained. So the love for it vanishes and is entirely obliterated from the mind.

Moreover, that the imagination moves according to that which. is represented to it and not according to the outcome of things, is shown by the fact that men dislike honey when it is served up like bilious matter ; and they dislike laudable sapid foods should their colour be made like repugnant substances :

or even when they are served in the appearance of repugnant objects, even though such things are not believed to exist at all.

Similarly with this : when a given likeness to the above-named thing is portrayed (either because of the intensity of the impulse of the desire, or because of the worthlessness of realizing the desire — as though it had actually been attained) it has the same effect as if it had been realized ; therefore there is no rancour.

From what has been said in the preceding chapter, it is evident that the last-named kind of temperament is that which is most disposed towards rancour.

9. How the Appropriate Medicines Stimulate and Strengthen the Breath.

1119. We can now understand how the appropriate medicines can stimulate. Wine, for instance, restores the breath by nourishing it ; pearl and silk (which counteracts disagreeable things) supply the breath with brilliance and luminosity. Emblic myrobalan, amber, and coral concentrate the breath or prevent it from dissipating rapidly ; doronicum modifies the temperament of the breath by giving it heat, camphor and rose-water do so by imparting cold ; sweet aromatics strengthen the breath by endowing its substance with agreeable and sweet fragrance ; bugloss and lapis lazuli act by separating off black bile and fumosity. Changes are produced by adding or removing a drug ; e.g., coral may be joined with amber and bugloss.

In some cases, gladness is the outcome of the intrinsic property of the drug. This is so in the case of sumbul. In other cases, the intrinsic property of the drug produces its effect indirectly by acting upon one or other of the primary causes of gladness. Thus, musk and amber act on the breath by way of their aromaticity. The juice of matian (359) gives rise to gladness in virtue of an intrinsic property. But when used in a case where the temperament of the breath is hot, the stimulant action is effected by way of infrigidation. When the

temperament of the breath is cold, doronicum acts as stimulant both in virtue of its intrinsic property and by imparting warmth to the breath.

1120. In dealing with all these drugs, then, it is necessary to know whether the properties are general or specific. When the property is general there is no need to make any modifications in employing it for weakness or depression of the heart. An instance of such an agent is afforded by aromaticity. On the other hand, where the property is specific, it requires modification, For instance, the juice or syrup of matianus is cold, and will stimulate one kind of temperament bat not another. If it be desired to use matianus to make a person of cold temperament glad, it is necessary to counteract its coldness by a calefacient ; and it would be more efficient to choose a calefacient which itself is intrinsically a stimulant. For instance, musk or amber is mixed with syrup of matian, because they supply

both warmth and stimulating power.

Aromaticity and sweetness are potencies which, though opposite, are yet attracted towards qualities which are agreeable to the substance of the breath. They supply the taste and fragrance which the natural and vital power respectively desire to receive.

Where two drugs are of equal power, the sweeter and more aromatic of the two will prove a more efficient adjuvant, because these properties are more attractive to the members (especially the liver). Should nutrient properties be present as well, the . breath is more rapidly nourished ; and being medicinal in character, it acts more rapidly on the breath.

These indications guide as to which drugs to use to obtain a more rapid effect.

1121. The essence of aromaticity lies in its rarefaction ; the essence of sweetness lies in its concentration and earthiness. This explains why aromatics are so much better adapted to feed the breath, while sweet substances are better fitted to nourish the body. Consequently aromaticity is more efficient for the heart than sweetness, while it is the other wav round in the case of the liver. The heart is the matrix of generation of the nutriment of the breaths, whereas the liver is the matrix of generation of the nutriment of the body. That is why it needs less aromaticity and more sweetness to nourish it than does the heart. All the same, aromaticity is required by the liver, because that organ is the matrix of the natural breath — not a matrix of generation of breath, only a substrate for the breath

to reside in (according to those acquainted with the truth ; not according to those who merely speculate.)

The natural breath has a desire for aromaticity and is invigorated and refreshed by such. It is easy to see that the natural faculties will also be invigorated in consequence.

10. What "Property" Is, and How It Differs from

" Nature."

1122. Strictly speaking, the specific " property " of a thing is the same as its " nature." .The one term would really be defined by the same words as the other. The specific property is the source of movement or rest in whatever things it occurs.

Nevertheless, there is a difference between the two conceptions, in the same way as the particular differs from the universal. It is not true, as the laity think, that the two terms belong to opposite things. The truth is that the first-principles behind all generable and corruptible substances are primary active or kinetic energies, and occur either simply in fire, air, water, and earth, or linked to a composite temperament.

1123. There are two views about this : (a) that the disposition appears synchronously with the production of

physical form ; {P) that the disposition is inherent in Matter from the outset. Once matter assumes a given physical form, it can only assume some other form by dispersing the first form. That is, Matter relapses to the natural power of the disposition.

1124. Whichever view is correct, it is true that from such a physical form (whose constituents have become so to say blended) there emerges a power which could not have appeared in the several separate constituents. For instance, the attractive power of iron in a magnet is not in any of its component powers. It arises out of the divine emanation which pervades all things and makes latent energies kinetic. This happens in one of two ways : (i) by means of something primarily inherent in matter ; (ii) by means of the temperament which itself disposes it to receive the given power, and is yet itself neither power nor physical form.

1125. We now have the answer to the questions, what is " specific property " ? What is " nature " ? If one asks, " Why does fire burn ? " one must needs answer " because the thing burning has a combustible nature." If one asks 3 " why does a magnet attract iron ? " it can only be said, " it has

an attractive power by nature." To say that fire burns because of heat is no better than saying a magnet attracts iron because of having the power and nature to attract iron ; we may say the nature of the energy called " heat " is to burn up in fire, and call this " combustible nature," " combustible power," but there is no name for the other. The giving of a name has not imparted complete knowledge about the matter ; to know the name does not remove the real lack of knowledge about a difficult phenomenon.

1126. But people are not usually satisfied by the preceding answer because they want to believe that every property arises out of the "heat," "cold," "dryness," or " moisture " of a body, in virtue of heaviness or lightness or movement or of any of the things which are obviously really dependent upon the components. When they find that actions are not to be attributed to any of the aforesaid, and that the real reason for an act is not apparent, they come to the conclusion that every one of the first beginnings is inscrutable. That is not true. Actions proceed either from natural or vital or intellectual or accidental (contingent) properties.

1127,, We may pass over as untrue the other theories held about magnetic force — that it attracts iron because of (i) heat ; (2) cold ; (3) a spirit residing in the magnet itself ; (4) sending out hook-shaped bodies ; (5) likeness between the nature of the magnet and the nature of the iron ; (6) a vacuum in the iron. The fallacy in all these ideas is easily seen when we reflect on how a green twig acquires nutritive properties from its constitution, which is the same sort of thing as the reception of magnetic properties from a constitution in the iron. What is not understood is why the magnetic power is so much greater in iron than in any other thing ; yet this ignorance is no greater than that which exists in reference to other matters.

1128. This ignorance is in two directions : (1) we do not know the initial factors which go to produce this attractive power. Neither do we know them in regard to any other force. (2) we do not know why this body is more disposed to take on magnetic power than any other body. But neither do we know more in regard to other phenomena. We are in exactly the same case concerning colours, fragrance, powers of the mind, and such like matters. Of course we can say that all such phenomena arise out of the active principles originally blessed by God, and we can allow that the basis _ of the disposition which comes from the particular constitution is due to a re-

arrangement of Matter. But though we may guess that it is the proportions of ingredients which account for the existence of a temperament, it is quite another thing to be definite about the absolute proportions of this commixture, and we shall be ignorant of this as long as we live in this world. . So it is evident that our ignorance of the real causes of the power in the magnet is not as remarkable as our ignorance of the real causes which dispose the corporeal or mental body to redness or yellowness.

1129. The fact is that we take little interest in the common things of life ; the mind neglects to study them ; so often is it true that the rare things are the ones to excite admiration and be enquired after and their causes speculated about.

1130. Conclusion. — " Specific property " is the " nature " met with in compound substances after a characteristic temperament (and its correspondingly special and characteristic state) has been initiated in them out of the supreme and limitless " influence." This is the real truth about " specific property " (individuality).

In spite of this being so, it is common for people to say that specific property differs from " nature " in that the former appears in complex bodies after a special act has occurred to make its nature manifest. On the other hand, the " nature " of a thing is said to be the power by which simple bodies are operated. This is as far as the laity and feeble searchers-after-truth can see. Now, if Fire is a difficult thing to make, and is carried from distant places, surely the laity might wonder at the specific properties of this more than of other things, and look more closely into the causes of its specific property than they do into those of other phenomena that appear to be more remarkable. To think how Fire removes visible forms, cannot be touched, rises upwards, makes the things over which it can prevail ascend, can be generated from a small quantity in large amounts within an hour, destroys whatever it meets and transmutes it into its own essence, is not lessened by however much is taken from it ! — surely these facts are more wonderful than the attraction of iron by a magnet, or than other specific-properties.

But, being so common, seen so much every day, these things evoke no admiration. There is no interest displayed in seeking their explanation. The action of the magnet seems extraordinary and receives universal wonder, and everyone is interested -to enquire into its nature, and origin.

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(This completes the first part of this tractate. The second part presents a classification of the drugs acting on the heart, and a description in detail of their characters and properties and uses, and shows how to combine them m the best manner appropriate for the -varying temperaments which the physician is likely to meet The plan is the same as that of the Second Book of the Canon, so that the two would be usefully considered together. But an attempt to do this m this treatise would unduly add to its bulk, for which reason the translation necessarily closes here.)

CONCLUDING SURVEY

URING (§267) the past fifty years, the popular imagination has been stirred by a succession of important discoveries in the domain of medicine and surgery. The triumphs of the latter field have been spectacular to a degree. Those of medicine have been much less conspicuous, chiefly because the mind must enquire into them before it can properly appreciate them. How much does not humanity owe to the steadily continued researches in bacteriology, and the painstaking observations which have revealed the life-cycles of many of the parasites to which tropical and other diseases are due ? and to the whole procedure of immunotherapy, the just pride of scientific as distinct from clinical medicine, and the outcome of all these researches ?

§ 268. As compared with all this, the speculative subtleties of former times appear both futile and unworthy of resuscitation. But the ancient system was not as valueless as is so generally supposed. Taking as an adequate criterion the first book of the Canon of Medicine of Avicenna, which is here presented almost in its entirety, and is fairly representative of the whole work, we find in its pages references to many departments of human knowledge* — cosmology, anatomy, physiology, and psychology ; the various branches of clinical medicine — etiology, semeiology, diagnosis, and prognosis ; the departments of therapeutics — hygiene, dietetics, balneology, and climatology, in addition to materia medica, pharmacology, and pharmacy. Moreover, the reader is presumed to be conversant with logic, criteriology, and metaphysics.

§ 269. The presence of obvious literal errors in the work must not lead us to commit the more serious mistake of overlooking the fact that it is entirely built up upon a sound philosophy of human

nature, which is as vitally important to-day, though largely ignored,

* Though it might be objected that all these departments of knowledge are now separate sciences, each requiring its own professorial staff, its own literature, and journals, and that they are not mentioned under the special names with which we are familiar, their existence in those days cannot be denied.

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as in former times. The ancient medicine was concerned essentially with the given patient now before us ; whereas now it is simply the science of diseases which it is our duty to diagnose accurately, prevent if possible, and treat on lines capable of wholesale application. To Avicenna, the determination of the constitution of the patient was of the very first importance, for on it depended the character, course, and duration of his illness/and upon that again depended the choice

of remedies. .

§ 270. After all, from the patient's point of view, the real object of consulting a medical man is to be restored to a state of well-being. It is little comfort to be (virtually) told that 85-90 per cent, of cases of his complaint are cured by the treatment adopted in his case, only to find that he proves to be one of the remaining 10-15 per cent, for whom there is litle or nothing to be done. True, his sighs are drowned in the shouts of the fortunate, and fail to reach the clinical laboratory, surgical wards, consulting room or research

councils. r

If in the interests of these few, chance leads us to the pages ot this ancient work, it would seem that suggestions occur in it which enable us to understand their plight, and thereby help them to under-stand it also. Even if the enemy is not put out of action, his enmity is less evident when he is understood.

§271. It has been the aim of this treatise to elaborate Avicenna^ s central theme by references to the various philosophies extant in his time _S u fic, Vedantic, Buddhistic, Chinese ; to Persian writings subsequent to his time (Rumi, Sa'di, Shabistan, etc.) ; and to views presented by various modern philosophies, including western theo-

sophy. ,

But these various directions of thoughts are not drawn upon in order to elaborate a composite system after the fashion of theosophical eclecticism. On the contrary, readers accustomed to various modes of thought are invited across a bridge leading from their various starting-points, across the chasm of modernism, until they reach the concise teaching of Thomistic philosophy, wherein all other aspects of the one truth receive their proportionate places. The inclusion ot ideas from writers who appear to be altogether m bye- ways may torment a few, but may also help a few to see the greater thing and thereafter be content to stay upon the broad highway to which the several paths have converged.*

Science has been removed from its usual role of master, and has been pressed into service ; and that service is to illuminate the

subject of human nature. To quote a recent paper (Altounyan, Lancet, i 9 28,ii,68 4) : " under the great swelling flood that represents the growing complexity of modern medicine, let us not allow ourselves

* This aim is represented in pictorial form on the Plate introducing this survey. The upper eft^ortra?t reproduces^ of Avicenna ; the : upper right portrait is of a famous ancient Chinese doctor. The bottom portrait is one of the late lnajat Sn to whom the author owes his introduction to the « subject of £he Canoasomc vears ago The centre of the plate fitly gives a portrait of bt. I homas Aquinas 1 d> Si M^n taken from " Dominicana," Marchf 1927] . In this way the scholastic philosophy^ suggested as the natural end of varied but converging hnes of though.

to be submerged. Let us hold fast to that great life-saving conception of the essential unity of the human body. Let us oppose fearlessly those currents of medical thought that tend to isolate, arbitrarily and to the detriment of true knowledge, the various segments of this one great subject. Let us welcome all methods, all discoveries, that help the one man in charge of the one patient to broaden the base of his attack, to widen the sweep of his beneficent vision." These words were possibly expressed with a different object, but apply well to the theme of this treatise. The old teaching about " constitution " should undergo a mutual intergrowth with the knowledge of modern science, pervaded throughout with the fundamental teaching of Thomistic philosophy, when there would emerge the beginnings of a possible system, of modern scholastic medicine — -thoroughly logical, plain, free of mystery, free of materialism, but not ignoring the so-called " occult " and metaphysical ; with the knowledge of the nature of the constitution of the individual patient as its central and dominant theme.* Were the whole medical training along such lines, the student would be able to approach his clinical instruction thoroughly aware that the individuality of the patient comes first, and that the ailment from which he suffers is but part and parcel of one single story, and not merely an accidental superposition. But the student would constantly need guidance to ensure his over-riding the disregard or ignorance, if not actual rejection, of scholastic principles which characterizes the concrete modern teaching of pathology in its various departments.

II

§ 272. The following brief survey of the most important teachings of the Canon reinterprets them under three headings : (1) the general notion of the nature of the human being ; (2) the notion of the constitution of any individual when in health ; (3) the notion of the nature of the state of disease. These together provide that clear mental idea of " the patient before me " which is essential before I can effectively treat him.

(1) The general notion of the nature of a human being.

The following three propositions belong to it.: (i) The human being (MF) is composed of matter and a principle of life, the two together making him " he " ; or, he is " a single substance endowed with a natural tendency to realize and maintain the conditions of its organization." — (ii) This principle of life comprises three main groups of potential and actual activities — the vegetative, the sensitive and the rational. This multipotentiality of the principle of life is represented in the expression " bundle of life." — (iii) The

organs of the body are the material manifestations (the actualities) of the several potentialities. The vegetative organs belong to the " vegetative soul," the sense-organs and appurtenances belong to the "sensitive soul." The intelligence and will belong to the rational

* This sketch of the scope of medicine on a scholastic basis purposely excludes reference to ethical principles.

soul, which has not literal organs but acts through the instrumentation of the organs of the vegetative and sensitive systems. All these components belong intimately together apart from macroscopic or microscopic boundaries.

These propositions are further defined by the following negative statements : (a) The human being is not a collection of molecules and forces ; he manifests chemical, electrical, and other phenomena, which are not causes, but effects, (b) The organs are not distinct from the powers they exhibit, (c) The brain is not the producer of thought.* Thought is produced by the activity of the rational soul ; the changes in the brain — whether chemical, cytological, or otherwise, are not causes, but the visible effects of the activity, id) There is no bridge over the gulf between rational life and the vegetative-sensitive life ; the distinctions are radical, (e) The life-principle is not subject to the laws of inheritance, those which govern matter ; it is not divisible into organs, or parts, or elements. As soon as it . ceases to operate, there is left behind the material body, which though apparently the same is actually quite different from the animate person recently before me.

(2) The notion of the constitution of any given individual when in health.

This notion should be made as tangible as possible. Extending the remarks of § 27, the constitution may be expressed in terms of a number of formulasf to be taken together — a series of " notes," some of which are constants, and others variables.

I.— The Constants, (a) The body, (a) General physique [good, poor; robust, spare; strong, delicate]. (b) Dominant " element " [Ex. : E 2 W 2 F 5 A 3]. (c) Dominant " humour," shown in the humoral formula [Ex. : S^F^A 2 — for sanguineous, serous (lymphatic), bilious, and atrabilious] : this formula is really descriptive of the" " temperament," but the latter word bears a different meaning in modern popular usage, (d) The absolute or relative strength or weakness (functional capacity) of the several organs ; hypo-, hyper-function. Example : V 4 T 4 M 2 3 N 1 G 3 , for vegetative (i.e. alimentary), thoracic (i.e. respiratory and circulatory), muscular (incl. skeletal), osseous (inch genito-urinary 138), nervous (inch sympathetic system) and glandular (incl. haemopoietic, endocrine, and hepatic) types. 138 , (e) The emotional make-up, or formula. Example: G 3 L 2 T 1 I 5 (gaudium, laetitia, timor, ira : § 160, III), from which the

* The remarkable actions which man achieves by his complicated mechanical contrivances are distinct from himself, whereas in the human being the mechanism and the manipulator are the selfsame. Even when there is as grave mechanical interference with organs as occurs in hemiplegia, or in the cortical lesions of insanity, the rational soul remains untouched, though no longer able to communicate its activities to the outer world.— To quote St. Thomas : '* the intellect, being a power

that does not make use of a corporeal organ, would in no way be hindered m its act through the lesion of a corporeal organ, if for its act therewere not required the act of some power that does make use of a corporeal organ." 81 (p. 177.)

j In the supposititious formula? given, the qualities are represented by the initials of their corresponding names ; the quantities are represented by mdex-numbers from 1 to 5, to stand for slight, moderate, normal, marked, and very marked respectively.

dominant passion and its modifiers are noted. The modern use of the word " temperament " belongs here.

<2W 7fiR d i^%T° e !f Ca P + t city is ? art jy ^Plained by considering the time-factor (233, 768 § 247), and partly as a fundamental difference (45) AH the material brought to an organ, whether nutritive, or excretory, is not at once taken ub fn ^Tlr 1 ^ T% a C + ertam P ro P OTtio » is amoved and the remainder passes o^ £ that the blood has its composition at a certain level. The modern "threshold values recognize this fact. The time-factor is of very great importance. nreSil0iCl

(B) The mind. Here comes the description of the disposition the type of mind, or mental make-up (§§ 78, 161, 164). Mental capacity may be expressed in terms of the relative or absolute strength or weakness of the various faculties, enumerated under talents (which are simply developments of particular faculties above the average) in § 1 64 (V).* The mental attitude towards things which emerges from the character, is also to be noted, for sometimes this may explain the cause of the illness (e.g. wanton exposure to infections m spite of warnings), and will show whether the patient is suppressing relevant facts, will respond to treatment, or is secretly concerned with some fear or doubt which is the real object of his visit to the doctor. Moreover, knowledge of this aspect of character will safeguard the physician himself, either by making him aware of the patient's possible cynical opinion about a profession he is unfortunately obliged to deal with, or, more important, by enabling him to avoid offering advice which is palpably foolish to an intelligent patient. b

II.— THE VARIABLES, (i) The degree of vitality. In the text this is also spoken of as strength of innate heat. See also under

k^ ath . §§ *3 6 > Hi J and its phases and cycles (§§138, 209) W,-4£ viatlons from the functional capacities normal to the individual (m) The nature or degree of " resistance." In terms of the Canon this would be expressed in the " humoral formula," and in terms of

obstructions " of various kinds. These account for the " soil " which renders declared disease (a) possible, (b) amenable to alter-ation by artificial means, (iv) Other cycles (296-301, § 138 183)

Foreign though such data are to modern clinical work, they are often actually employed in ordinary conversation, as when one describes a person as sanguine, or bilious, or phlegmatic, or as of saturnine temperament. Some adjective descriptive of the emotional-make-up is not infrequent in case-reports. Degrees of vitality are spoken of, seriously by the laity, diplomatically by the practitioner In so far as they provide a simple means of codifying tentative know-ledge upon complex and elusive individual characteristics which it is our duty to notice, the data are all worth consideration.

J" '**■* better the disposition of a body, the better the soul allotted to it ;
S t tinrJ a ? P6arS "V* 1 ^ of different species : and the reason thereof is thai
some men T pcavedmto matter according to matter's capacity ; thu£ because
SSt b0dl ^- 0f better disposition, their souls have a greater power of
E« f<w ? g -l ' * • ^- S ° CCU , rS m re S ard to the lower P° wers of which the intellect
minora*™ ™ °P eratl °* = for those in whom the imaginative, cogitative and

Jw ™ J i F° a f 6 ° f b6tter disposition, are better disposed to understand "

(oum. ineol. 84 p. 203.)

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(3) The notion- of the nature of the state of disease.

§ 273. The vegetative processes associated with digestion and absorption of food may be first briefly referred to. As suggested in § 27, the picture of the whole nutritive cycle is comprehended in the idea of the " liver." We trace the food-constituents through the columnar cells of the intestinal mucosa, across the areolar tissue into the vascular roots of the portal and lacteal system ; then into the liver-unit itself (comprising phagocytic secretary cells, fundal cells, cubical excretory cells, and the hepatic arterioles and lymphatic clefts related to the sinusoids). Then into the general blood-stream, and finally out of the body through various organs, including the goblet cells of the intestinal mucosa, the bile-ducts, the pancreas, etc. The extra-hepatic portion of the cycle is nearly co-terminous with the rest of the body.

To complete this picture we first remember the relation between quality of food and quality of chyme ; then we consider how the . ultimate components of the food travel (N-compounds, glucose, fat, phosphorus, sulphur, iron, and the like)— during rest, exercise, sleep, etc. : and according to the character of the diet as a whole, the fluids taken, and the state of the bowels, etc. We may realize that they are manifested in the blood in the form of alkaline tide, viscosity, .fibrin-content, and the various morphological changes revealed by blood-examination. We picture also the innumerable chemical interchanges and physical transformations in various parts of the cycle ; the formation of waste-substances, and the factors on which the whole of the processes depend. (§§ 88, 105). In brief, then, our picture of the body is that of a complex of tubes and channels (potential as well as actual), which vary in size from the obvious alimentary-canal, air-passages, and great blood vessels, down to the finest ramifications of the latter, the cavernous tissues (both macroscopic and microscopic), the serous cavities, and the intra-cellular channels.' All these form one continuous labyrinthine system, through which we may trace the ingested food materials, the metabolic, secretory and excretory products. As long as these channels are patent throughout, and as long as these various sub-stances (including the " breath of life ") can flow freely through them, and the vital energy has a free play outwards, so long is the body in a state of health.

But as soon as there is a continued interference with the freedom of movement, even though it be merely an ebb and flow that is affected, in any part of the canalicular system, then a state of disease arises, culminating in histological anatomical changes. Hence, when we observe a case of illness, we may be sure there is some " ob-

struction " in some channels in some part of the body — not necessarily in that where the symptoms occur.

E.g. : The nasal discharge of " cold in the head," the bronchial expectoration in bronchitis, the serous effusion into the pleura, the respiratory phenomena m an attack of asthma, are manifestations in the respiratory system of obstructions elsewhere.

§ 274. The next addition to the picture of the sick person's

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state is furnished by the causes of the obstruction. Avicenna considered these under two groups, the " material " (i.e. those in which " matter " is concerned) or " humoral diseases," and the non-material. To the latter group would belong cases of gross obstruction, such as by compression from without, or such as by obstruction with calculi ; and those in which there is a functional disorder — hypo-function, hyper-function, dysfunction. For instance, in renal disease, the loss of functional capacity may render the normal ebb and flow of substances disorderly. 141

§ 275. The group of humoral diseases is predominant in Avicenna's pathology, and if we bear in mind what the " humours " really are, this position becomes quite reasonable. Perverted metabolism is associated with changes of physical state in the fluids of the body. Limpid fluids may become viscid, viscous substances may become mobile or " tenuous." In the ancient work, these chemical changes were. thought of, not in " equations," but under interchanges between the imponderable elements ; as being subject to the laws of urooj, nasool, jelal, jemal, qada, qadr, the rhythm, phases and rate of movement of the " breath " ; and the fluctuations of degree of innate heat. Concrete examples are such as : precipitation of urates in tissues, altered reaction of tissue-juices in rheumatoid arthritis, cardio-renal disease, tuberculosis ; variations of content of Ca, Na, Mg, etc., in the tissue-water, so that the flow from tissue to blood and vice versa is impeded. (Cf. Bechold, xi % Schade, 137 ^, Pearson and Wyllie, 160 and many other authorities).

The Canon often insists on the presence of " superfluities-^ as a cause of " obstructions " of the canalicular system — not only in'the tangible four humours, but also in regard to the " Breath " (" fuliginous superfluities," 238). In the latter case, the substance of the breath (i.e. water- vapour) ceases to be " bright," and " clear," and its odour becomes offensive, and its freedom of flow is impaired.

§ 276. Finally, adding from modern knowledge, there are the changes in the fluids of the body produced by bacterial or putrefactive breakdown, whether this begins in intestinal stasis, or arises in the course of specific bacterial infections. There are then obstructions not only in the old sense, but in the form of the successive histological lesions consequent — vascular, nutritional, and inflammatory. Materials are deposited more or less permanently (irreversible reactions), as e.g. solid oedema, collagenous tissue, scar-formation, fibrosis and hyalo-fibrosis, adipose tissue, hyperplastic formations. Loss of anatomical patency is superadded to loss of functional perviousness.

§ 277. Clearly, whereas we give first place to the bacterial

invasion, Avicenna gave it to the habits of life. He was so deeply impressed by the obvious fact that the quality of food determines the kind of chyme, that the kind of chyme determines the quality and amount of the four humours, 106, 360, 791, § 195 (3). The quality and amount of humours determine the quality and Quantity of the waste effete products (i.e. the superfluities). These affect

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the freedom of flow through the diffuse canalicular system of the body. As they accumulate in the stagnating tissue-juices they come to exercise a noxious action ;>. they come to be beyond the capacity of the third and fourth digestions (tissue-digestion), and with their stagnation the ever-circulating bacteria (taken up with the food) also settle and multiply and wandering-cell infiltrations gather together. The beginnings of disease are laid down. The functional disturbance has been succeeded by anatomical lesions (222, 226).

§ 278. The following chart illustrates this notion of the nature of the state of disease. The amount of disease-substance or " superfluity " is plotted out, say from day to day, and shows an irregular line. As long as this line does not reach higher than a certain level, say b, the person appears to be in perfect health. If the accumulation of morbid matter, with associated "' obstruction," is at a higher level, but below the heavy line c, he may feel ill, but has no definite lesions. If the superfluity curve reaches above c, there is some lesion which can be definitely diagnosed. There is a concrete diseased state. The height of the curve, and its nearness to the danger level, b, can be determined by the use of reasoning, aided by the various " indications."

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§ 279. Finally, Avicenna enlarges his view of humoral disease by noting the influence of many extracorporeal factors (234, sqq.) as well as the period of life, not to mention the " decree of Allah ^ (61). Thus, one and the same kind of food taken at the " warm " period of life in the " warm " season may contribute- more to the formation of a given humour than at another.

If we knew the patient's formulae, and how the climatic and other conditions are likely to affect it, and whether they are compatible or not with susceptibility to the agents at work, our composite picture of the patient's state would be of great value, and illnesses often inexplicable would lose their mystery. How much more efficient might not the treatment be, if the remedial measures in contemplation were selected to harmonize with them ?

No doubt only a fanatic would note the barometer, thermometer, humidity, hours of sunshine, wind-direction and velocity, the character of previous seasons, the clues afforded by the migrations of insects, rodents, and birds, the presence or prevalence of certain parasites in a district, and the many other points noted in 191 to 451, before prescribing the regimen for the patient. But it would seem that some Eastern physicians of bygone times conscientiously strove to learn from such factors.

Ill

The Guides to the Diagnosis of the State of the Patient

§ 280. The patient before us is as a manuscript written in some highly complex language which it is our business to decipher. The alphabet is furnished by the several colours, the simple observations of size, shape, consistence, contour, texture, and the like. The vocabulary consists of the external features both in repose and animation, and of the physical signs as taught to-day. The grammar lies in the " general guides " (sphygmology, urinoscopy, examination of faeces and blood). The language is to be translated into : states of natural (vegetative), sensitive, and emotional faculties, functional capacities, plethora, obstructions, solutions of continuity, etc. — ■ that is, the state of the whole composite, in all aspects. This task can only be accomplished imperfectly at the best, even by the most skilled and most learned. Our silent teachers, or guides, the " indications " ("dalil") always enable us to ascertain something, and we must perforce be content with that on the present occasion and be determined to use this experience as the guide to better success on the next.

§ 281. One of the guides suggested in the Canon lies in one's own state of health. Properly to interpret what we observe, we must ourselves have no disharmony of functions arising from errors of diet, no deposit in the urine, no weight in the bowels, no obstructions in our own brain, no mental fatigue, no emotional pre-occupation, no rigid notions regarding etiology or prognosis ; there must be clear channels for the breath, and the breath must be under the control of the will ; it must be kept pure by recollection, by devotion, and observance of prayer. The reason for this is that under such conditions, long persevered in, we are enabled to receive an " impression " from the patient ; we become aware of his atmosphere, aura, or personality in the form of an idea of his degree and kind of vitality. But unless this impression is registered rapidly, namely at the first approach of the patient, it will be confused and illegible by reason of the mutual inter-impression of one's own vitality with his. In another idiom, we observe " with the eye of a Taoist." In our own idiom, we make use of sound reasoning power, common sense, and a certain kind of " intuition," or " clinical sense."

§282. The guides furnished by general observation of the patient are, in brief : (I) External features in repose : (a) Colours : of face, hair, skin, eye (sclerae, iris). (6) Odours and savours, (c) Form of the body (i) as a whole ; (ii) in detail. — The features, the hands, the limbs ; the relative proportions (length, breadth, and thickness) of nose, cheeks, upper lip, lower lip, chin, mouth, ears, orbit, eyebrows.

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forehead, etc. ; the character of the neck, shoulders, etc.* (II) Features when animated : {a) Expression : gaze, look, facial gestures (vivacity, sleepiness ; langmdness) (6) Deportment, or attitude (455) : gestures, carriage, specific acts or mannerisms, definitely morbid movements or defective movements, (c) Voice : tone of voice, manner of speech (clear, loud, or the opposites) ; clues to the physical and mental type, and the degree of energy and vitality. (The observation of the voice simply in relation to the diagnosis of aneurysm is quite insufficient.)

§283. The "general" guides. Our use of these differs noticeably, from that revealed in the Canon. To follow Avicenna, (i) when one places the hand on the pulse, one absorbs oneself in it, without the distraction of a watch, until one has found out how it runs — minute after minute. Even if it misses, without an intermission

of the heart, because the patient gives a twitch of the finger or begins to talk, one learns even from that. . The study of the circulation is more than the study of the heart's action, (ii) When one examines the urine, even with all the apparatus of modern chemistry, we must remember that it is first and foremost the guide to the state of digestion—especially its " second stage " (that in the liver) as well as in the " third " stage (that .in the small vessels). We are misled by the search for albuminuria and glycosuria, for many would make these abnormalities into diseases. Thus, the number of persons in whom albuminuria is not evidence of renal disease far outnumber those in which it is ; the presence of such a substance in the urine should lead to the questions : is some substance not being dealt with ? if so, why ? can only the kidney handle it ? To follow a useful rule, the real trouble is remote. It may lie in the brain, in the emotional state (cf. Graves' disease, e.g.). Pentosuria, cystinuria, alkaptonuria also break the current ideas about urinalysis. 162 (hi) As regards the guide furnished by the faecal matter, again, our knowledge is much greater than was Avicenna' s and we do not apply it in his terms. We are apt to lose ourselves in fat analyses, nitrogen estimations, occult blood tests, B. coli classifications. Negative results in each case are taken to mean " nothing of note," regardless of the continual secretory and excretory changes proceeding in the intestinal mucosa, and the vitality of nerve-ganglia, etc. Essential and definite derangements may occur without conspicuous deviations from the restricted standards usually laid down.

§ 284. The guide furnished by an examination of the blood may be spoken of as the most notable modern addition to Avicenna' s three general guides. The data obtained from it— physical, physico-chemical, cytological, serological — are very numerous, but are lost more often than not by restriction to the diagnosis of the various

* Space does not allow of any attempt to furnish precise details of the external signs of functional capacity of internal organs. The principle is exemplified thus : the lower part of the nose is part of the respiratory system, and shares in the degree of development of the whole system ; therefore wide nostrils with well-formed ate so with good development of the whole respiratory function, whereas narrow delicate nostrils and small ate refer the observer to some other system as well-developed Large mouth, thick lips, large masseters, and generally well-developed lower part of the face go with good development of the digestive tract throughout. Moreover, development or capacity above the average in one system denotes relative weakness and functional deficiency in another system.— The subject is extensive.'"

" blood-diseases." When properly applied, all the data obtained from the blood inform us of the functional state of all the organs, and of the existence of the main groups of pathological state (§ 173).

IV
Treatment

" The healing art, as it is described in books, is far inferior to the practical experience of a skilful and thoughtful physician. "(Rhazes.)

" He went forth and hired himself a house in the city for the better storage of his books and scrolls, his medicines and his aromatic roots. Then he set to work choosing the fittest drugs and simples." Night 49. (Burton.)

" Many are healed by the action of nature without the art of medicine." (Summa contra Gent. 82 ii. 75, p. 204.) " Man teaches by outward ministration, but God by inward operation : even so the physician is said to minister to nature when he heals. "(ib. p. 205.)

§ 285. APPLICATION of the principles of the Canon to modern practice would seem superfluous. The common ailments, especially those of minor surgery, are nowadays treated in stereotyped fashion, which appears to be beyond improvement. It is not with such cases that reference to the Canon is suggested. It is the general principle which may be reviewed in the mind, and lines of treatment such as were once in vogue may be quite usefully applicable in a few cases which do not well respond to modern methods. Moreover, the conscience of even the most careful may not be altogether clear in regard to the immemorial rule : " tuto, cito, otjucunde."

The subject may be briefly considered under two headings : plan of treatment ; methods of treatment.

(1) The plan of treatment

§ 286. Choice of a plan of treatment depends on the view which is taken as to the cause of the illness. It is no new or modern thing to say " treat the cause." The distinction between new and old is in regard to the idea of the nature of the cause. In these days nearly every illness is ultimately due to an infection or intoxication, and the aim of treatment is to destroy the one and render the other innocuous. To Avicenna, illness was primarily an abnormal state of condition, to which many factors contributed, and the scheme of treatment must therefore envisage them all. To facilitate this, the practitioner of those days would advisedly mentally review the whole of the Second Part (191-451).

§ 287. Indeed, if we scrutinize the subject more closely, it will appear that Avicenna's plan is after all very proper. For, even if we could attack the microbic cause specifically, there would still remain the lesions which it has produced, and the lowering of the vitality {= interferences with the flow of vital currents, in Paracelsus' idiom 29). A condition remains to be combated ; the condition is uppermost as far as the patient is concerned. Even in those relatively few cases in which the disease is bound up with a particular organ,

so that the name of the disease is according (e.g. gastric ulcer, cerebral haemorrhage), it is the condition we have to face, lhe cause, even when known, has done its work, and gone.

S 288 It is true that many other interpretations of disease and corresponding plans of treatment are put forward in various quarters from time to time, especially by the intellectually anarchistic. This occurrence is partly the outcome of the arbitrary attitudes towards patient and friends sometimes exhibited by some of the representatives of academic medicine and would be best met by frank and courteous

enquiry into lay opinions. Not everyone subscribes to the restrictions of medical ethics and the patient is too often treated as if illness ipso facto at once deprives him of ordinary intelligence. After all, he seeks medical help for a distinct object, and remuneration for the services is presumed, so that he is entitled to go elsewhere at his own choice, if unfortunately in his particular case the plan and method of treatment proves unsuccessful. But this view is not subscribed to by those who assume that the whole of the knowledge needed for. every case is comprehended within the orthodox teaching of the day, and that every individual possesses it.

(2) The methods of treatment

§ 289. Even the methods of treatment set forth in the Canon are still resorted to at times. No doubt, we would do well to follow them more frequently. Thus, systematic purgation is often called for, but not carried out as radically as of old. Cupping is still of value for such conditions as lumbar myositis, acute (hemorrhagic) nephritis and those diseases amenable to autohcemolysins. Venesection is sometimes effectively applied for cases of high blood-pressure, threatened apoplexy ; it is incidentally used in the course of obtaining

blood-tests.

§ 290. Drug 1 reatment.- — The steady decline of drug treatment in modern medical practice is evidenced in several directions, (a) The steady removal, in successive editions of the British Pharmacopoeia of herbal remedies which are supposed to have no action because laboratory animals appear to be unaffected by them, {b) The infrequency with which medicines are ordered for hospital patients, (c) The penalization of panel practitioners for "over-prescribing." (d) The desire on the part of many lay persons to banish " drugs " as being unnatural.

Inconsistencies are frequent. There is the strange perversity which (through legislation) denies facilities for the use of the tew drugs whose potency is quite unquestionable. There is the subterfuge of resorting to placebos (which often cost no more than the bottle containing them). Those among the lay who decry drugs are pleased to employ " herbal " remedies. Where there is a popular demand for the latest remedies, this is met by a never-ending stream of new synthetic and other preparations, and costly manufactured products, which also the medical world submits to. Truly the mind

ever seeks in the relatively inaccessible, and the expensive, that which lies all the time, and without price, at our feet. It describes as " progress " that which better knowledge would render superfluous.
§ 291 . The truth is that we know far too little about the herbal remedies of the Canon. To begin with, we forget that they cannot be efficient without careful attention to the conditions of their cultivation (soil, climate, season, etc.), the times proper for their collection,

the details of their preservation, and the laws governing the formation and circulation of the active principles during the life-cycles of the various plants. We do not individually know how to identify adulterations, whether accidental or deliberate. We leave to wholesale manufacture that which was once properly undertaken individually, since personal artistic skill may be the real condition for pharmacological efficiency. We adopt the short cut of standardization of drugs as the remedy for the loss of potency inevitable after neglect of such various factors.— But even if the purity and potency of remedies be granted, by recourse to the best sources, they must be employed with deliberate care. As Avicenna shows in the second book of the Canon, there must be a knowledge of the constitution or individuality of the plants which yield the drug ; harmony with the constitution of the patient must be aimed at. Out of a number of drugs of like action, some will accord better with one person's constitution than with another's. One remedy may soothe and ease without its specific action being at all diminished, whereas another performs its work harshly and unpleasantly ; another may be overpowered by the personal factor. The scope of the subject is great, and its study, with intent to serious practical application, should not require an apologia."

§ 292. — Such considerations as these open the door of Romance. The discovery that all Nature is a living Whole, always at work, earnestly, steadily, continuously developing an idea, would arouse a new and intensely absorbing interest — that of watching the Unseen Worker ; though His hands are not to be discerned, that which He does is ever proceeding before us as a continual motion-picture ; and we may become aware not only of the merely superficial fact of the movements, but also of the purpose unfolding. Watching the medicinal trees and shrubs and herbs in this way, and seeing their properties by their forms, and colours and odours, and their changes m character with the changes of the seasons, and alternations of drought and plenty (variations of rate of growth, of activity of flowering and fruiting), — how great is the wonder of the work of Nature ! We note how substances are being elaborated into plants which we, wanting their help, know how to take at the crucial moment — " now we must draw the resin ; now we must take these flowering tops," and so on. But we are not the only watchers. The bees have been waiting, and the birds, the slugs, the ants, the herbivora — all these and many others wait to draw from such supplies that which is applicable to their several requirements. Nature Herself also waits for all these things to be collected from Her treasury. Everything has been worked out ; the interactions are arranged for ; they all belong to the purpose of the Designer ; and He Himself is waiting for that over which He incessantly broods, with entire and complete intention. He too waits to draw out of Creation that which was His object in making it !

§ 293. No doubt it is true that few of the ancient physicians entered fully into this inner life of the world of which they formed a part. Few even of those who learnt the Qanun by heart may have applied it effectively at all times and on all occasions ; few may have meditated sufficiently to consider the soul-life of the patient they were called upon to help. But the Life was there then, as it is here now. It could be read then, as it should be now. The entry to the infinite treasure-house of Nature was not locked then, and it is not locked now. Indeed, the entry was not

merelv through one door ; there was a portal of entry on every side. Doors so large StobedSniblefrom'afar; doors so small that few could find them .but even through the smaUest there was the same ability to enter the treasure-hall. Travellers in those days might fear imagined ogres, jinn, and terrifying guardians to counter talismans ; but the keys of safety were everywhere to hand for all these beings were amenable to caresses-the caresses of a heart which approached them with reverence

and affection ; asking questions but never injuring ; always treating everything within the treasury (for it is living) as gently as one should approach to watch a sleeping babe^ ^ ^ ^ ourse lves not to pass these things by. If we did nothing more than study the materia medica of those days to see what products were available we should have ample material for thought, and become cognisant of the links betweln that age and this. The drugs are still cultivated, and still used m the East L tie manner ff the past, and the history of their names adds to our understanding of their uses While it is true we can supply our needs through an order to the apothecary based on information imparted to us through various intermediaries, we may some day find that in doing so we have omitted to look mside the treasure-house Togo back to the old paths, watching Nature and studying the uses of the living plants is not to lose the definite therapeutic effects we seek Far from it ; and there fs the added insight into that universal Life which needs transference from the inexhaustible abundance of Nature at large into the thirsting ^£ n °* ^ P^w particular —It would then be not simply as a relaxation from the exacting labours of the city that one would go abroad into the country-side It would be for the purpose of retiring to watch, and meditate upon the manifestations of the quiet Persistent surging life of creatures below the level of man, thereby to learn something of the secret thrfugh which the equilibrium of health is to be restored to the needy and also oneself to receive from the fountains of life.

S 295 Dietetic treatment. — In these days, this form of treatment is increasingly to the fore. But whereas modern thought is in terms of food- values and the like, the Canon insists (and rightly) on the necessity for studying physiological and psychological incompatibilities in regard to each component of the diet, and for selecting the various articles of food according to their constitution, so that they shall be in harmony with the constitution of the patient.

S 296 Regiminal treatment— -The term " regimen " has a wide range. This has already been sufficiently indicated at the end of Part III (§ 254). The consideration of the specific constitution of the patient, of his present state, and of the conditions which are likely to arise during the various successive phases of his illness, must pervade everv detail of the prescription of the regimen, to ensure that the correspondences between the state and the various measures adopted shall throughout be as harmonious as possible.

S 297 In this way, the great importance of individual artistry in treatment is constantly insisted on, by contrast with the prevalent stereotyping of therapeutic methods, whether in regard to Stater regulated practice in its various branches, or in the provision ot medical relief on a wholesale scale, or in the efforts to subject as much as possible to the output of team-work. The atmosphere thus created helps the student to realize that the last word has not been saia when the clinician's discourse over the hospital bed is ended and the protocols, and therapeutic orders have been set upon the bedsheet.

8.98 The f oUowing may be quoted here, from Bauer - • - : " It is true, there is a difference between the pure medical science and the art of : its practica 1 application at the patient's bedside. This art is somewhat more, indeed, than t^s apphcation it requires more than a complete knowledge of all scientific details , it is and will be

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always an art which never'will be transformed into an exact science, as the complete understanding of one person's psychophysical machinery never will permit us to understand a second man's personality just as well by a pure analogy, because of the practically infinite variability of the individual constitution. The individual analysis must start always anew, and what science of the human constitution may help, is only to establish certain groups of more or less pronounced common characteristics . . .it will never replace entirely the doctor's art to . . . take the individual particularities of his patient into consideration ... in constructing his diagnosis and in applying the fitted treatment."

§ 299. The clinical handling of a case is guided from time to time by the experience which has been concentrated into aphorisms. Like many ancient medical works, the Canon abounds in these also, and some of them will no doubt be found among the modern collections of aphorisms which are available. In this way, too, it may be true to say that the conduct of a modern case sometimes receives the personal guidance of the wisdom of the past.

§ 300. But the time has come to close the ancient book. As we do so, we are conscious that our range of vision is widened, and our sense of responsibility deepened. We may pass back to labour along the sick, seeing things anew in the light thrown upon them by the company of the great Persian Sage, better aware of our own shortcomings, and more convinced that we are ourselves individually to gain our own discernment into the intimate state of the people with whom we must deal. We face more confidently the exceptions to academic lore which are so much commoner than the rule.

Deeper insight into the nature of man, and the wider outlook of a true philosophy does away with notions of superiority of new over old, making clear, as it does, the necessity for combining and welding the two into one corporate whole. But over and above all this, this ancient work reminds us that the change of state of the patient from illness to health is always ultimately among the counsels of the Divine Physician, who alone overrules our ideas of cause and effect, when He utters the words —
" I say unto thee,
'Arise'."

APPENDIX

i. Progress

Progress is a relative term. The common error is to assume that it is an end in itself. Things which can be described as " up to date," or cast aside as " out of date," do not belong to the real basis of human life. The idea of progress is associated with the introduction of mechanical improvements of all kinds ; with mass production of manufactured articles ; with the standardization of existence. In the domain of medicine, it is more particularly associated with an increasing knowledge of concrete facts, with specific discoveries in etiology and treatment, and with a new nomenclature.

To illustrate the relative character of " progress " one may call to mind that many discoveries and inventions are simply actualizations of ideas previously current among thinkers, but perhaps not noticed at the time, or even repudiated or attacked as heretical. Further, as to the changes in nomenclature which occur as time goes on : because our language and idiom is different, many are apt to think the old statements were necessarily incorrect. — In mediaeval books dealing with materia medica, they said for instance : " dissolved in vinegar, the action is so-and-so," whereas we say simply: " acetum — , action and uses : . . . " — In chemistry, they might say " fire produces yz," whereas we say " on heating Z, the result is Y and X." — In medical text-books there are innumerable diseases which are not mentioned in old works ; and some diseases of the old books do not appear in modern ones. This is partly explained by the undoubted fact that we have diseases which once did not exist, whereas other conditions, very common in those days, certainly never occur now. — The methods of teaching are different. In these days we convey information much more quickly and readily by diagrams, charts, tables, styles of print, not to mention experiments, and moving-pictures. This fact does not prove that the learning of those days, acquired so laboriously, was faulty.

That which is called " progress " is also sometimes merely " fashion." The search for an elixir of life, for instance, has not ceased in the least. The gland therapy for restoring youth is perhaps the most conspicuous of modern variants of ancient research. Cupping and venesection were habitually used solely with the idea of " keeping fit " ; they have given place to the vogue of athletics and sport. — New treatments for various conditions are introduced from time to time, and seem to be great advances because they are often conspicuously successful at first. How often do they not give place to still newer methods, and perhaps finally pass into entire oblivion ? The fashion changes, and the old is supplanted.

2. Facts — Knowledge — Truth

It is suggested in § u that knowledge is not simply " acquaintance with an assemblage of facts " ; and that facts in the aggregate do not suffice to constitute " truth." There is a tendency to extol the acquisition of facts, as " adding to the sum of knowledge," and as being evidence of " progress." There are different forms of knowledge : human, angelic, divine. The perfection of knowledge is wisdom. There are different forms of truth : scientific, logical, moral, ontological, philosophical, theological, etc. But as to " Ultimate Truth," this is humanly unattainable, as may be illustrated by the accompanying diagram.

The observer and the thing observed are shown in plan, as being separated by a straight semi-transparent screen. The letters A to I represent the position of as many observers. For the purpose of illustration these are supposed to be of different nationalities and not necessarily acquainted with one another's language ; they also belong to different periods of life (childhood, youth, etc.). The observer at A may be supposed only to be able to see the part of the object marked A ; the observer at B, similarly, may only be able to see the part marked B ; and so on. But even if any of the observers could see several parts, evidently there still remain some areas which are out of the range of vision of all persons, as marked K. L, M. No one can comprehend the whole, under the restrictions given. (Cf. § 293.)

This conception may be applied to the interpretation of terms applied even to familiar objects. In studying the Canon, for instance, it is not enough to know the dictionary equivalent of an Arabic or Latin word, for the full meaning is not always adequately conveyed thereby. The word " Akhlaf " may be taken as an example. It is rendered humor, humour, body-fluid, juice (cf. rutubat), Saft. The impression conveyed by each equivalent varies according to ideas commonly associated with the word and the circumstances under which we -first heard it. The conception of the word " humour " was necessarily different in the mind of the ancient Greek physician, of the Hindu sage, of the erudite philosophical Chinese, of the alchemist of the Middle

A B C D E F G

H I

Ages, of the characters in Shakespeare, of the modern laity, of the student of esotericism, and of the modern bio-chemist. But even if we could combine all these conceptions, there must remain the K, L, and M necessary for a complete under-standing.

It has been said that we shall reach Truth by whatever road we take. But this is not so. There is really only one path which will take us there direct. All the others are devious and arduous, and in the end only bring us to the confines of Truth. We may trace out every separate road as outlined for us by as many separate thinkers of the past or present ; we may pursue the highway which modern science has opened out ; we may decide also to study the tracks with which we are furnished by Nature Herself. But even after all these have been slowly and laboriously surveyed by (spiritual) insight (Kashf), the best we can attain is but the fringe of Reality.

The irregular figure in the diagram, which serves to stand for " Truth " may also be thought of as the plan of a palace with many halls and courts. We may enter it through various portals, marked A to I, and we may leave it again to resume our ordinary duties. At some other time, on returning to the study of the contents of the various chambers, we may chance to find our way into some of the veiled portions (marked K. L. M), and perhaps gain a passing glimpse of what is beyond. Where-upon we shall not only rejoice in the enchantment of those unexpected revelations, but we shall see the world around us with new eyes. For this world is the palace. Through the visible things of this world we reach the invisible ; and through the invisible things we dimly discern the Life which is our ultimate goal.

" The face of all the world is changed . . .

Since first I heard the footsteps of Thy Soul."

APPENDIX 571

3. The- Materia Medica of the Canon

The following list gives those of the Simples discussed in the Second Book of the Canon which are still in use. Those marked, with an asterisk are Pharmacopeial ; many of the others are found in the Catalogue of Messrs. Heath & Heather, Ltd. (St. Albans).

A. Acacia gummi,* aconiti radix,* acorn, adeps,* agrimony, amygdala,* aloe,* alumen* (native), (ambergris), ammoniacum,* amylum* (from rice), anethi fructus et oleum,* anisi fructus et oleum,* antimonium,* anthemidis flores et oleum,* armenian bole, asafetida,* ash-tree, asphalt.

B. Barberry bark, banana, barley, bay- tree and berries, beech-tree (bark), beeswax (cera*), betony, bile (fel bovinum*), bistort (black hellebore) , bone-marrow, borax* (impure), bran, brown sugar, brooklime, white bryony root, black bryony root, bugloss, buttermilk.

C. Calamint, calamus, calx,* calcii hydras,* chamomile, camphor,* cane-sugar, cannabis indica,* cantharides,* capsici fructus,* carui fructus et oleum,* cardamomi semina,* carrot, cascara, cassiae fructus,* castor oil,* catechu,* cayenne pepper, chirata,*, chicory, cinchonae rubrae cortex,* cinnamoni cortex et oleums-cloves and oil,* cochlearia armoracia, cocoanut, colchici cormus et semina,* colocynthidis pulpa,* colophonium (" resina,"*), conii folia, convolvulus turpethum,* copper and copper sulphate (impure), coral, coriandri fructus et oleum,* cotton (gossypium,* and gossypii radicis cortex*), couch-grass (triticum), creasotum,* croton oil,* cubebae fructus et oleum,* cucurbita semina praep* (cyperus rotundus, cypress-turpentine tree fruit).

D. Dates, dried and fresh ; dragon's blood.

E. Egg-plant, elecampane, elaterium, embelia.*

jF. Foeniculi fructus ; ferrum* ; filix mas* ; fuller's earth.

G. Galls, garlic, gelatinum,* gentianae radix,* germander ginger,* gly-cyrrhizae radix,* gold, grapes (unripe), green vitriol, groundpine, gum tragacanth.

H. Hartstongue fern, hellebore, hemlock,* hyoscyami folia,* honey, humulus lupulus flowers,* horehound, hydrargyrum.*

/. Iron-rust, isinglass, ivy.

/. Jalapa,* jalapae resina,* juniper berries, and oil.*

K. Kaolin.*

L. Lard (=adeps*), lavender, lead carbonate and oxide, lemon, lime (" calx ") linseed and oil (long pepper, lote tree, lupin).

M. Mace, maidenhair, marsh mallow, mandrake root, manna, marjoram, meadow-sweet, mercury (= hydrargyrum*), mistletoe, mouse-ear, mugwort, myro-balanum,* myrrh.*

N. Naphtha, nigella, nitre, nutmeg,* nux vomica* (or, wintercherry ?).

0. Oakbark, olive oil,* opium,* orange-peel,* orangeflower water,* orpiment,

oxymel* ; many essential oils.

P. Parsley, pearl barley, pearlashes, pellitory root, pennyroyal, pepper (confectio piperis*), pepper-mint oil,* pepsin (tripe), pine resin (" resina,"*), pix liquida,* polygonum root, pomegranate bark, poppy (white), black poplar bark, red poppy petals (rhoeados petala*), Pterocarpi lignum,* pyrethri radix.*

Q. Quicklime (= calx), quillaiae cortex.*

i?. Rapeseed, rhubarb rhizome,* rice, rosemary, rue.

5. Saffron flowers, sage, sal ammoniac (crude), santoninum,* scammony root and gum,* sealingwax, seaweed, sennae folia et fructus,* sesame oil,* sevum prae-paratum,* silver, soapwort, sodium chloride,* sorrel, southernwood, spearmint (ol. menth, virid.*), sponge, stavesacre seeds,* styrax praeparatus,* stramonii folia,* sulphur,* sunbul.

T. Talc, tamarindus,* taraxaci radix,* thyme, tin, tragacanth,* truffle, tumeric, turpethum.*

V. Valerianae rhizoma,* verbascum, verdigris (copper acetate), vervain, viola odorifera.

W. Walnut, water-cress, white water-lily root, wax, whey, white lead, willow bark, wormwood (= absinth).

Z. Zinci oxidum* (but impure) ; zingiber.*

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• The numbers correspond to those given in the text when quoting from this list.

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in its endeavour to unify the human microcosm and its disorders and diseases with
the macrocosm, the heavenly Tao. Even though the edifice so reared is really
largely a castle m the air, the basic idea itself is grand and infrangible "

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A study of this index furnishes the best idea of the range of subjects discussed
in the First Book of the Canon.

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rendered on: www27.us.archive.org
seconds diff sec message stack(file:line:function)
==========
0.0000 0.0000 petabox start var/cache/petabox/petabox/www/sf/download.php:1:require
|common/ia:55:require_once
|setup.php:304:log
0.0031 0.0031 call get_redis() var/cache/petabox/petabox/www/sf/download.php:1706:main
|download.php:643:getItem
|common/Item.inc:65:parseMetadata
|Item.inc:97:get_obj
|Metadata.inc:350:get_json_obj
|Metadata.inc:1453:_get_json_obj
|Metadata.inc:1768:log
0.0103 0.0072 redis_read start var/cache/petabox/petabox/www/sf/download.php:1706:main
|download.php:643:getItem
|common/Item.inc:65:parseMetadata
|Item.inc:97:get_obj
|Metadata.inc:350:get_json_obj
|Metadata.inc:1453:_get_json_obj
|Metadata.inc:1878:log
0.0213 0.0110 redis_read finish var/cache/petabox/petabox/www/sf/download.php:1706:main